

THE BRICKBUILDER

AN ARCHITECTURAL MONTHLY

VOLUME XXII

MARCH 1913

NUMBER 3

C O N T E N T S

PLATE ILLUSTRATIONS

	Architect	Plate
APARTMENT, CHICAGO, ILL.	Schmidt, Garden & Martin	44
CHURCH, ST. PATRICK'S, PHILADELPHIA, PA.	La Farge & Morris	37-40
HOTEL, RITZ-CARLTON, MONTREAL, CANADA	Warren & Wetmore	33, 34
HOUSE, ROWLEY, MASS.	Frank Chouteau Brown	45, 46
HOUSE, BERNARDSVILLE, NEW JERSEY	Delano and Aldrich	41-43
HOUSE, CHESTNUT HILL, MASS.	Page & Frothingham	48
THEATRE AND OFFICE BUILDING, COLUMBUS, OHIO	Richards, McCarty & Rulford	47
Y. M. C. A., LAWRENCE, MASS.	Brainerd & Leeds and O. A. Thayer	35, 36

LETTERPRESS

	Page
CHURCH OF ST. THEODORE, ATHENS	Frontispiece
PLANNING OF A YOUNG MEN'S CHRISTIAN ASSOCIATION BUILDING, THE.	
Part I. The Theory of the Plan	Louis Allen Abramson 49
Illustrations from plans and photographs.	Associate of Louis E. Jallade
ARCHITECTURAL LANDSCAPE DESIGN	Elsworth Stoddard 55
Illustrating the Use of Brick as a Garden Embellishment on the Estate of C. W. Lasell, Esq.	
UNIT POWER PLANT FOR ISOLATED BUILDINGS AND SMALL GROUPS.	
II. Types of Apparatus and Plant Design	Charles L. Hubbard 59
TERRA COTTA GRILL ROOM, A	F. M. Andrews & Co., Architects 63
Illustrations from photographs.	
MEASURED DRAWINGS—ITALIAN SERIES	Will S. Aldrich, Del. 67
Cornices—Verona, Brescia, and Siena.	
ST. PATRICK'S CHURCH, PHILADELPHIA, PA., LA FARGE & MORRIS, ARCHITECTS	
An Appreciation	Alfred Hoyt Granger 69
EDITORIAL COMMENT AND NOTES OF THE MONTH	71

NEW YORK

PUBLISHED MONTHLY BY
ROGERS AND MANSON COMPANY

BOSTON

ARTHUR D. ROGERS
PRESIDENT AND TREASURER

RALPH REINHOLD
VICE-PRESIDENT AND BUSINESS MANAGER

RUSSELL F. WHITEHEAD
SECRETARY AND MANAGING EDITOR

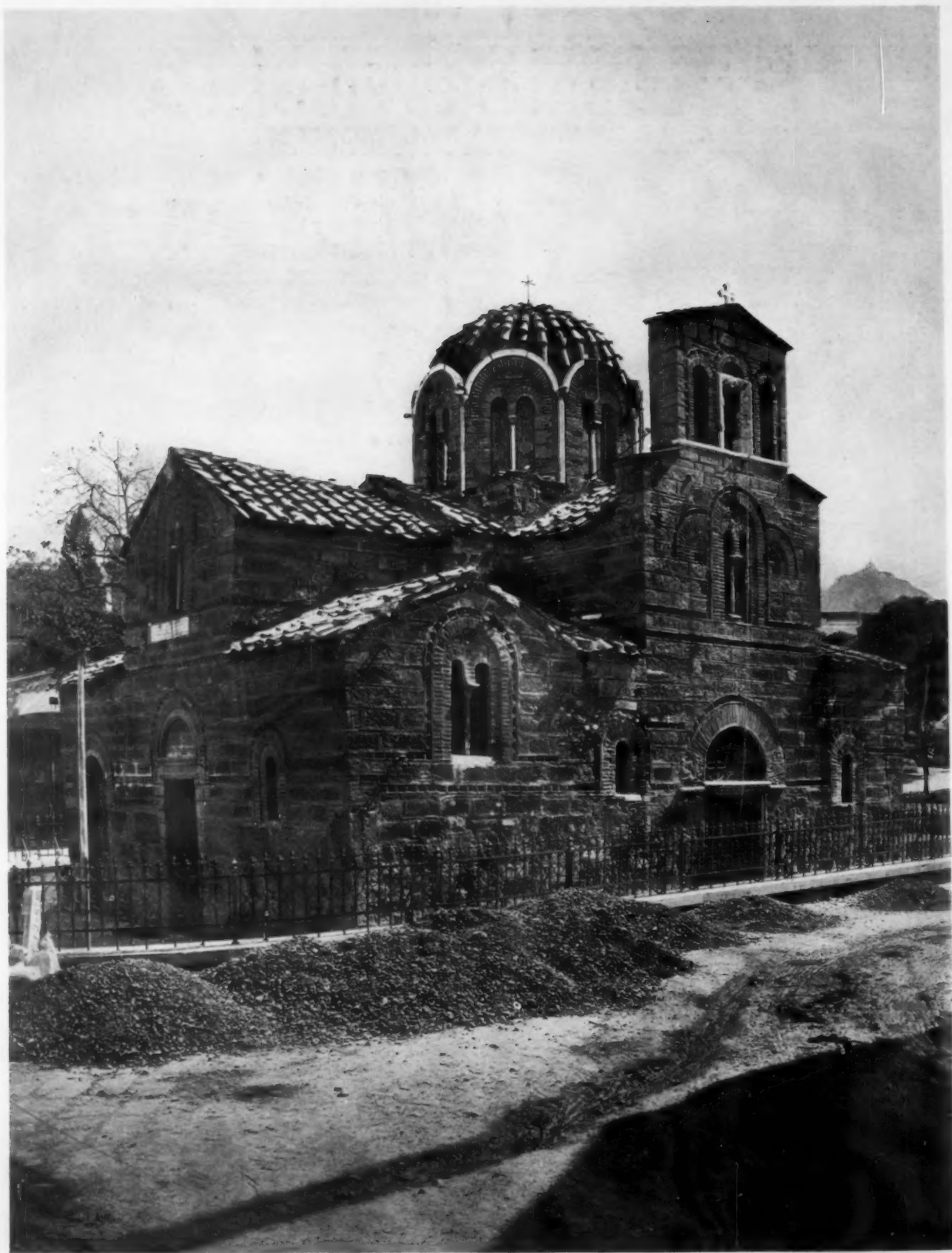
ENTERED AT THE BOSTON, MASS., POST OFFICE AS SECOND-CLASS MAIL MATTER, MARCH 12, 1892. COPYRIGHT, 1913 BY ROGERS AND MANSON COMPANY

SUBSCRIPTION RATES

For the United States, its insular possessions and Cuba, \$5.00 per year
For Canada, \$5.50 per year For Foreign Countries in the Postal Union, \$6.00 per year

All copies mailed flat

Trade supplied by the American News Company and its branches



CHURCH OF ST. THEODORE, ATHENS.

Peirae yellow sandstone with intermediate courses of brick. Below the clerestory windows is a curious terra cotta frieze of Oriental character. Middle of twelfth century.

Photo by Royal Prussian Photometric Institute.

THE BRICKBUILDER

MARCH, 1913

VOLUME XXII.

NUMBER 3.

The Planning of a Young Men's Christian Association Building. — Part I.

BY LOUIS ALLEN ABRAMSON.

IN a recent issue of *THE BRICKBUILDER* there appeared a very able and concise presentation of the basic principles that must govern the successful planning of a building for the Young Men's Christian Association. In this article, and those to follow, it is the author's intention to supplement the former more theoretical treatise with a practical study in regard to the plan, detail, and construction of the integrant rooms and departments that compose the Association building of to-day.

A perusal of the descriptive matter of any Association will immediately establish the fact that the initial purpose of a Young Men's Christian Association is "To Make Men" — to develop manhood from the raw material, "Youth." But as the Association is practically always, and intentionally so, partially dependent upon the community in which it exists for sustenance, the planning of the building must, above all else, make possible the consummation of its purpose at a minimum cost for overhead carrying charges.

This is accomplished when the following conditions are brought about:

(a) Construction must be of durable materials, selected only after a thorough test as to their fitness from a utilitarian standpoint.

(b) The plan must permit of the maximum flexibility and varied usages for the same rooms. Reapportionment of area for the different apartments must be relatively simple.

(c) The plan must permit of efficient supervision by a minimum staff of paid employees.

(d) The mechanical equipment must be possible of operation by other than skilled engineers; and so designed that all possible sources of unnecessary consumption of energy are avoided.

Under the first classification we are to deal entirely with the problem of the choice of proper materials, their use and abuse. This will be discussed at greater length in a future chapter. But in passing, we shall regard one example. It is common practice to construct the ceilings of the natatorium and shower rooms of plaster or galvanized iron. The former, unless constantly repainted, will ultimately disintegrate and become loosened; while the latter will rust where it has been sheared, or punctured at the nailing points. To illustrate the second condition: The gymnasium should be planned so that it can readily be converted into a place of public assemblage — having

direct entrance and exit to the street and adequate stairs to the running track, temporarily serving as gallery. That this arrangement might be feasible, it is necessary to provide a large room on the same floor level as that of the gymnasium (an exercise room or boys' gymnasium), into which all apparatus can be moved. Again, the several locker rooms should be planned with regard to the future requirement of the physical department. The rooms should adjoin one the other and be divided by wire mesh or other movable partitions as, invariably, the proportions of the junior to the senior members, as determined before the erection of the building, does not accurately materialize and is otherwise always subject to reapportionment.

To efficiently and economically supervise, it is necessary to centralize and amalgamate the points of control and the focal point of each story where such supervision is required, e.g., basement and first floor.

Finally, an absolute control of the light and heat must be had of each department independently of all others. For example, during winter it is necessary to provide a constant supply of heat in the boys' department during the entire day. However, it is an advantage to discontinue the supply of the dormitories during the greater part of the day. It is therefore necessary that the dormitory rooms be controlled independently of other departments, and so eliminate the necessity of visiting each room and there closing each radiator valve.

There is no one building that can be chosen as being ideal, except as to its type. Nor could a plan be devised that could reasonably be termed ideal; for each community has its individual problems, and the peculiarities of its membership, the privileges afforded to both members and non-members, and the extent of its executive force, all tend greatly toward the determination of the proper plan. An analytical study of local conditions must be made by the architect in consultation with the secretary and committees, if a plan adapted to the needs of the community is to be obtained. The author is aware of the existence of several buildings of exactly similar plan and designed by the same architects of which the original building has successfully met the demands; and the others dismally failed. A total collaboration between the architect and his committee is more essential in Association work than in any other form of institutional building. Professional obstinacy to suggestions and precedent predetermines fail-

ure. In this paper the author will take as a subject for illustration and discussion the units that compose the average building adaptable to the needs of the community of eight to ten thousand, and will study these units separately and in conjunction with their related parts. Generous reference should be made to the diagrams and other illustrations reproduced herewith.

BASEMENT.

Hall. The termination of the main stairs in the basement should be directly in a hall. This hall should be ample in its dimensions to prevent congestion, as is apt to occur after the discharge of gymnasium classes. From this hall, entrance should be had to all other departments, supervised, and some mechanically controlled, by the attendant in charge of the basement. The position of this attendant's desk must be such that from it a careful supervision can also be obtained of the activities in the different rooms.

In conjunction with this desk there is often a moderate

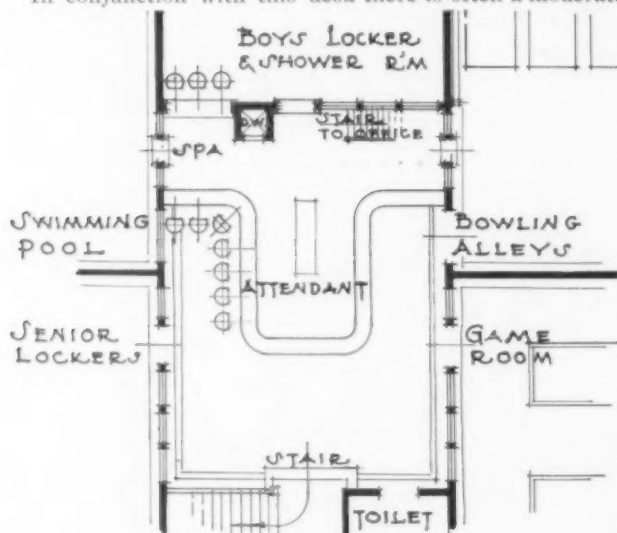


FIG. I.

An arrangement insuring ideal supervision and control from the attendant's desk. Notice that the spa serves both juniors and seniors.

lunch counter or spa where light refreshments can be procured. This lunch counter is mostly used in the morning by the dormitory men and by the physical department members after exercising. It should obviously be placed in the line of their circulation, but still be recessed sufficiently to avoid becoming obtrusive. It is decidedly of advantage to have the serving space in direct communication with the kitchen on the second floor by means of a dumb-waiter. Care must be taken to adequately and rapidly ventilate this serving space so that the offensive odors will not be carried into other rooms or up the stairs into the social rooms of the first floor.

The position of the attendant must be such that in addition to the duties mentioned above he can collect tolls for the use of the bowling alleys and game room (if in the basement). During certain periods of the day it is often necessary for the attendant to be away from his desk, and a circular stairway, or other convenient means of access, should exist between the main desk on the first floor and that of the basement. However, this stair should never lead through an open well in the floor, as otherwise the noise of the basement will be communicated directly to the office and become decidedly objectionable.

Physical Department. A study of the natatorium and baths, likewise the locker rooms, will be taken up later. Suffice it to say that certain rigid laws affecting light and ventilation must be strictly adhered to. There are several locker systems in successful operation. Some have merit by reason of their space-saving possibilities; others permit of greater sanitation; and again, some have virtue by reason of their economy.

Toilet. Provide ample toilet accommodations, but reduce standing room to the minimum to discourage the room's use as a rendezvous. Two water-closets, one urinal, two basins, and a slop sink are ample.

Game Room. This room, containing the pool and billiard tables, is not always provided, local protestation sometimes forbidding its initial introduction. However, if not originally provided, experience has taught that provision should be made for its future installation, whether in the basement or on the first floor. The maximum equipment will, in most instances, probably consist of four tables, full size. Ample provision must be made for spectators, preferably along the walls and not between the tables. If the spectators' chairs are placed on a raised platform, the tendency will be to keep the visitors from encroaching upon the playing space. (Fig. II.)

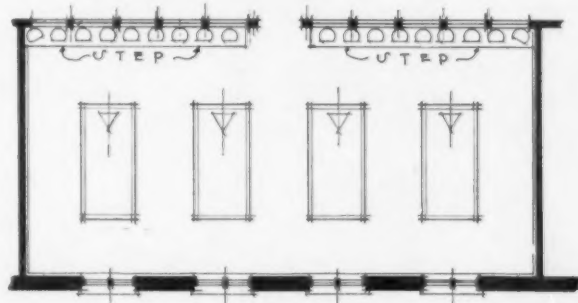


FIG. II.

An exceptionally good arrangement for the game room. Note that the windows are opposite each table and that spectators reach their chairs without interfering with players.

Bowling Alleys. The bowling alley equipment (Fig. III) should always be of the regulation size, of the latest model and complete in every particular. Otherwise, their patronage will soon be diverted to quarters offering more satisfactory inducements. The number of alleys to be planned for depends entirely upon local demand, the usual installation being two pair. Spectator space on stepped platform should be provided behind the runway, likewise alongside of alleys and next to the exterior wall, if the source of light, so that (a) spectators will not be obliged to face a strong blinding sunlight; (b) splashing rain cannot enter the windows and ruin the surface of the alleys; (c) radiators and steam-pipes placed along the exterior walls can be reached and valves adjusted without walking over and consequently mutilating the surface of the alleys. There must be no posts or other obstructions between the alleys that will prevent a clear view along the entire length of the bowling alleys. Discretion should be exercised in determining the position of the alleys so that the noise generated will in no way annoy other activities in progress at the same time. As the junior department is least active in the evening and the bowling alleys have their maximum usage at this time, it is advisable to locate the alleys under the boys' rooms with the pin pit farthest

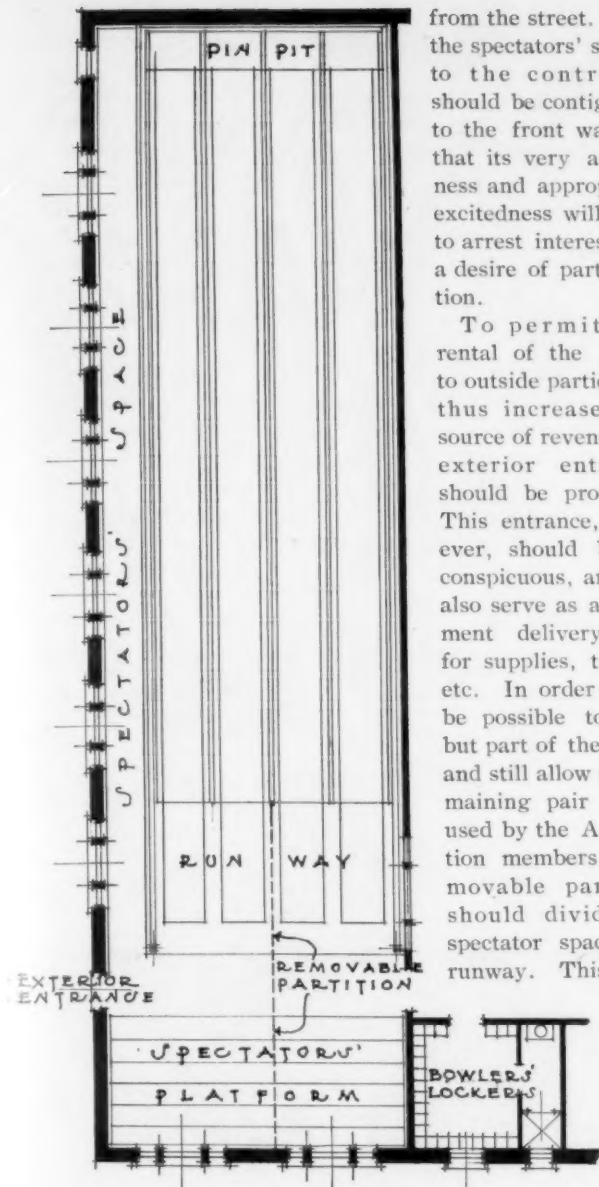


FIG. III.

Note the absence of windows on the rear wall, eliminating a source of annoyance to the players.

tion can either be in the form of an obscure, glazed sliding sash or else rolling shutters. The latter are more desirable, for when not in use the vertical guides

from the street. But the spectators' space, to the contrary, should be contiguous to the front wall so that its very active-ness and appropriate excitedness will tend to arrest interest and a desire of participation.

To permit the rental of the alleys to outside parties and thus increase this source of revenue, an exterior entrance should be provided. This entrance, however, should be inconspicuous, and can also serve as a basement delivery way for supplies, trunks, etc. In order that it be possible to rent but part of the alleys and still allow the remaining pair to be used by the Association members, a removable partition should divide the spectator space and runway. This parti-

can be removed and the lines of vision unobstructed. For tournament purposes a considerable number of chairs are required, and for their storage a convenient room should be provided. In a community where bowling is active, a small locker room with a shower bath for the exclusive use of the bowlers is a very profitable adjunct.

Storage Room. A capacious room is necessary for the safe storage of such equipment that is only to be used from time to time. Again, certain activities, as, for example, some of the educational classes, are discontinued during certain seasons, and their especial apparatus must be safely preserved.

FIRST FLOOR.

Entrances. While the exterior of the building must of necessity be simple and modest, the main entrances, that is, to the junior and senior departments, must be accentuated, preferably by exaggerating the scale of the masonry opening in relation to all other fenestration, and so give the entrances an aspect of openness and shelter. Architecturally, the junior entrance should not be quite as prominent or imposing as that provided for the seniors. The entrance steps should be confined within the vestibule, to discourage loitering on the part of the members and others, and further to reduce the possibility of accident through negligence in not removing snow and ice. The entrance to the lobby must be direct and not circuitous. Upon entering one should immediately see the lobby and not come face to face with a barring wall. Minimize the distance from the entrance to the center of activity.

Senior Department—Lobby. Careful study should be given to the location and plan of the lobby and its related rooms. Being the hub of the building, its position must be central and the entrances to the other rooms, halls, and stairs must be directly from the lobby proper and within the control of the attendant's desk. The lobby should present an extremely dignified and genteel atmosphere, unpretentious and hospitable, as its function in the building is that of a social center; and its outward appearance must be such that it will command the proper respect and regard of its members. If poorly lighted and cheaply constructed of sheathed partition and common partition sash, having columns scattered here and there, and bizarre fresco decorations, quite naturally the members will refrain, perhaps unconsciously, from cultivating a proper sense of dignity. A room well illuminated, free of obstructing columns, of studied proportions, and imparting an hospitable atmosphere of the home living room will obtain the desired respect from the members.

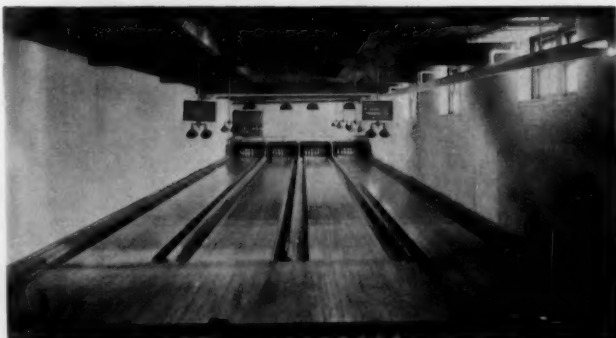


FIG. IV.

An absolute, unobstructed view of all alleys from any point on the spectators' platform.



FIG. V.

An example of excellent supervision—entrance, lobby, game room, stairs, coat room, etc.

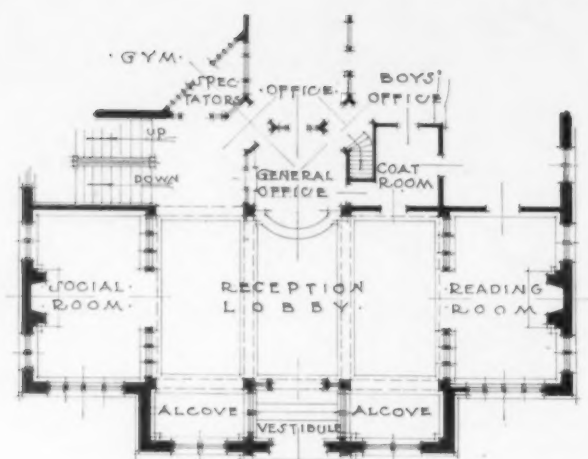


FIG. VI.
Perfect supervision and control.

As implied above, the attendant, from his position, must be able to conveniently supervise the movements of the men entering and circulating to all other parts of the building. Therefore the means of entrance, stairs and corridors, must be within the possible visual, if not physical, control of the attendant. Non-members must be detected and properly directed to their destinations. (Fig. VI.)

General Desk and Offices. The proper relationship for the desks and offices is best expressed in Fig. VII. This arrangement groups the offices, so that in addition to a supervision by each secretary of his own department, at certain times, partial control can be had by either from their offices, of the other departments. It is decidedly advantageous to have each office so placed that the secretary, remaining in his office at his labors, can yet be able to greet the members as they enter. This, however, should be arranged for through a glazed partition, rather than through an open door, as otherwise each man so welcomed would accept the greeting as an invitation to linger.

The boys' secretary's office need only be of sufficient size to comfortably accommodate his desk and such other usual furniture, but the general secretary's office must be of such size that it will accommodate committee and board meetings. If space is limited, and the committees large, then it must be possible to convert two or more

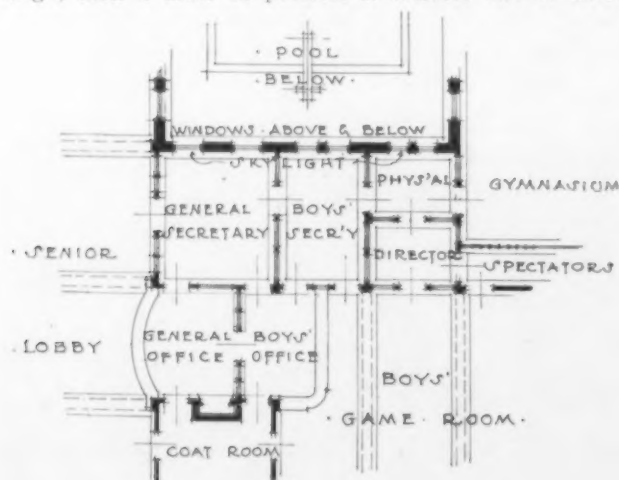


FIG. VII.
An ideal combination of offices permitting supervision of all departments by one man.

offices into one. This, however, is not ideal, as it necessitates the moving of cumbersome furniture. Here the question of expansion and flexibility becomes very important. As the work of the Association increases, additional offices are established, such as for employment and religious work, and provision should be made for their accommodation. A vault for the storage of documents and silver service, about 18 inches deep and 5 feet wide, is of great value and its location should be within the general office space. Light and air for the offices should be obtained, if at all possible, through windows, and not through skylights. The advisability of providing a special toilet for the secretarial staff is questionable. It is considered by the author to be an advantage to the work if one of the compartments in the general toilet be reserved and so keep the conditions familiar to the force.

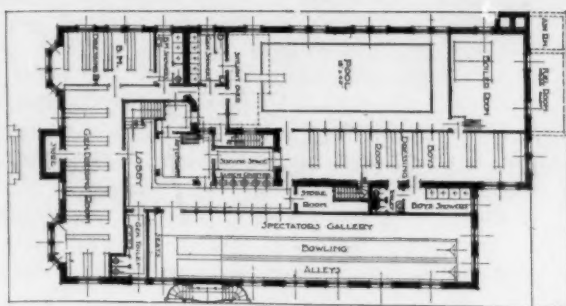
Coat Room. The coat room should do service for both senior and junior departments. It must consequently be contiguous to both desks, as the office attendants are in charge the greater part of the time. It should be placed at a point not too distant from the entrance and on the line of circulation to and from the main stairs, but never



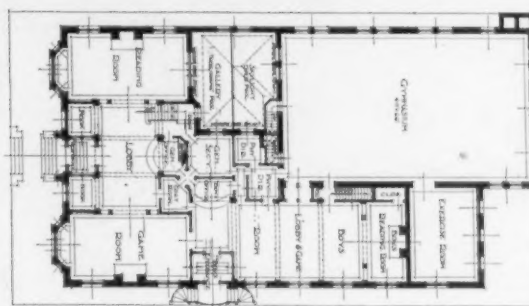
FIG. VIII.
A group of well arranged, light executive offices.

on a corridor. The size of the coat room depends entirely upon the service it is to perform. That is, whether it is to be used by members only or also by those attending general meetings. The door should be of the Dutch type, not less than 3 feet in width, with brass-rimmed shelves 16 inches at its maximum width. If the coat room is to be used on occasions of general public meeting, then there should be a secondary door of the same size and type to accelerate the service. In addition to coat and hat racks, provision should be made for the reception of umbrellas, school books, tennis rackets, and members' outgoing and incoming laundry. A steam coil should be placed close to wall with a metal shield to deflect the radiation vertically and be operated during inclement weather.

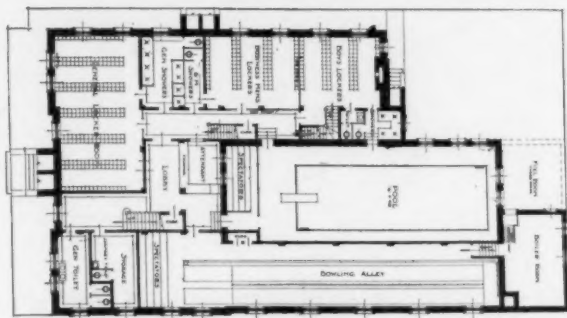
Stairs. The stairs, both up and down, should start from a point in the lobby adjacent to and in direct view of the desk. An arrangement similar to Fig. VI. is ideal, as it compels one to pass the desk and so insures against promiscuous entry. Furthermore, at such times as the attendant is not at his desk in the basement, the general office



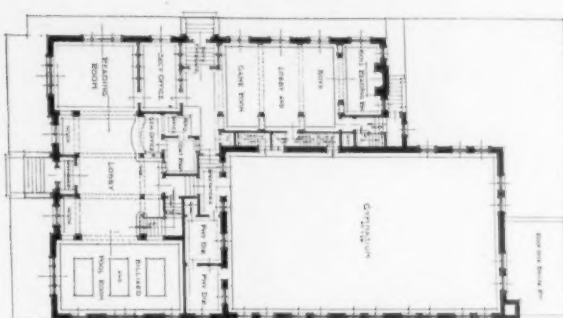
BASEMENT PLAN



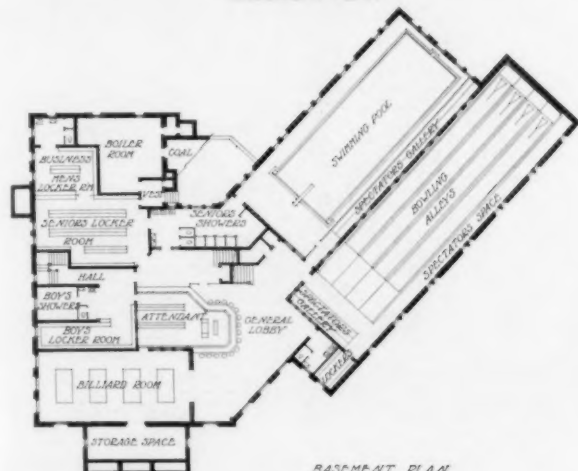
FIRST FLOOR PLAN



BASEMENT PLAN



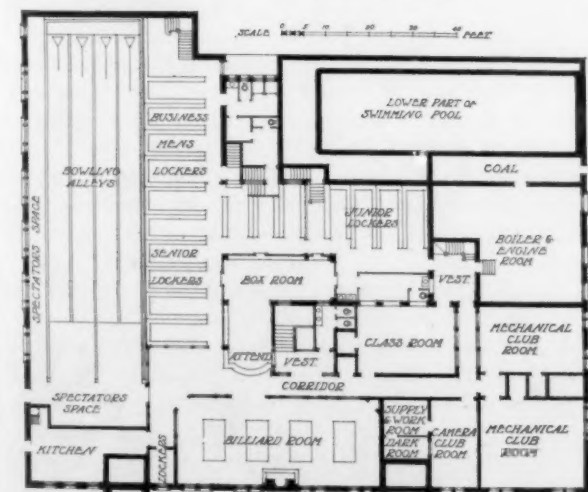
FIRST FLOOR PLAN



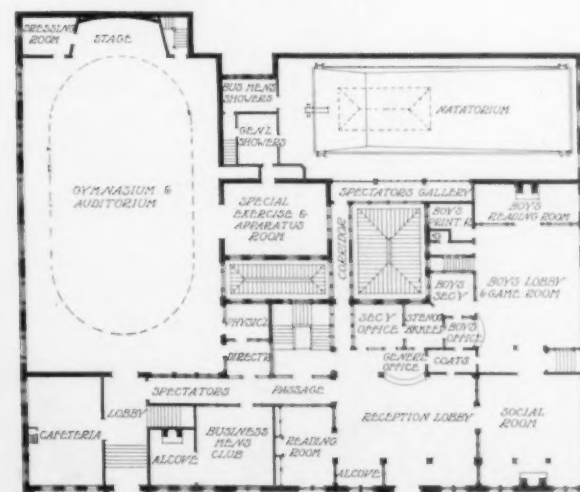
BASEMENT PLAN



FIRST FLOOR PLAN



BASEMENT PLAN



FIRST FLOOR PLAN

BASEMENT AND FIRST FLOOR PLANS SELECTED FOR STUDY

THE PLANNING OF A YOUNG MEN'S CHRISTIAN ASSOCIATION BUILDING

desk can control the circulation to the basement, by operating an electrically controlled door at the head of the stairs. If that part of the basement at the foot of the stairs is in the proximity of the bowling alleys, or other rooms where shouting is common, then doors must be placed at the head or the foot of the stairs to check this disturbance.

Reading Room. The Association does not usually attempt to vie with the public library as customarily books are not for circulation. The reading room does not, except in few instances, even attempt to co-operate with the educational department in supplying reference books. Its function is more that of a retreat, where books and periodicals are accessible and where the members of the educational department can retire in advance of their classes. It should therefore be isolated to insure quietude. Enclosed bookcases to a height within standing reach should line the walls. A fireplace is extremely well fitting and useful.

Social Room. The social room, usually placed symmetrically to the reading room with regard to the lobby, contains the smaller game tables such as checkers and chess and is really an adjunct to the lobby. At times it will be used as a meeting place in conjunction with it, and the separating partition should really be a glazed screen with wide doors.

The social life of the Association is exemplified in the lobby social and reading rooms. They therefore should be placed along the main façade, so that passers-by can be favorably impressed by the activeness and attracted at night by the brilliant and symmetrical illumination of these rooms. It logically follows that the junior department, dormant at night (except when used by employed boys), should be relegated to a less important section of the building than that given over to the seniors.

Junior Department. The location of the junior department is also determined by other factors. As is readily conceived, the social rooms of this department at times become a bedlam and their location should therefore not be such that their presence will disturb and handicap other departments, especially when day classes are given. Modern practice, as a result of a varied experience, demands a segregation of the boys' work from that of the seniors. In the smaller type of building, however, the segregation is only confined to the social rooms and

the shower and locker rooms. In the larger buildings, however, it has been found advisable to provide independent gymnasium and natatorium.

Entrance. The boys' entrance to the lobby can, if continued upward, become a night entrance to the dormitories, and, where the meeting room of the second floor is used extensively by the general public, the same entrance can be converted into a special one for this room.

Lobby or Game Room. The social rooms provided for boys' work differ in purpose from those given to the senior department, inasmuch as a general lobby is not necessary. Boys will not sit around unless otherwise occupied, and will therefore rather be found playing at their games in the reading room or else in physical exercise. Consequently, a large room, furnished with the required game tables (pool, shuffle board, carroms), and a reading room are necessary. Several club rooms, about 10 feet by 12 feet, are desirable, and should be arranged with connecting folding doors. (Fig. IX.)

The importance of the boys' work has only recently been generally established, and modern practice is compelling a further segregation according to ages. Where the boys' work is, or promises to become, extensive, the lobby or game room should be divided, by movable partitions or glazed screens, into three

distinct departments: Junior boys (grammar school), senior boys (high school), and employed boys.

Reading Room. The reading room, similarly, should be divided for junior and senior boys, separated from the lobby by transparent screens. Constant supervision must be had at all times by the boys' secretary of his entire department. And consequently it must be possible for him, from his desk or office, to thoroughly control the activities and circulation of his members until they pass into the physical or educational departments, where they immediately should come within the supervision of the secretary in charge. For this reason, as much as possible of this department should be located on one floor, and that, the main floor. The boys' toilet should never be placed in the basement, but adjacent to the desk and under its supervision. The stairs to and from the boys' lobby should be so placed that they can be most easily controlled. It is well to enclose them within wire glass partitions with the doors mechanically controlled from the secretary's desk.

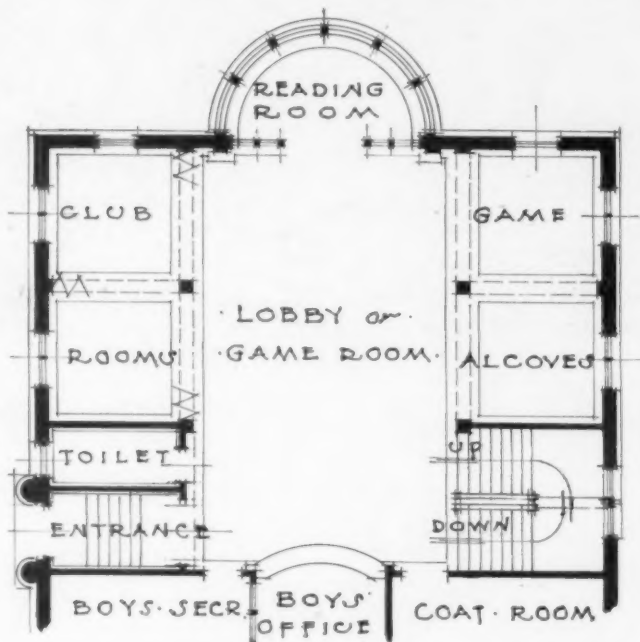


FIG. IX.

A well arranged boys' department under good control.

Mr. Abramson will continue in the April number to discuss the "Theory of the Planning of Y. M. C. A. Buildings." The series will further treat of the "Materials of Construction" and "Physical Department" (comprising Gymnasium, Exercise Rooms, Hand Ball Courts, Locker Rooms, Baths, and Natatorium). — The Editors.



Architectural Landscape Design.

ILLUSTRATING THE USE OF BRICK AS A GARDEN EMBELLISHMENT ON THE ESTATE OF
C. W. LASELL, ESQ. JOSEPH D. LELAND, 3d, ARCHITECT.

BY ELSWORTH STODDARD.

QUITE the most unique and effective brickwork that has been seen since the late Stanford White discovered the Harvard brick is found in the walls, buttresses, and arches of the garden of Mr. Chester W. Lasell, at Whitinsville, Mass.

Here are seen brick ranging in color from delicate orange to rich reds and deep violet tints like the brick which is so picturesque in Southern France. They are found to be brick that heretofore have been thrown away by the thousand, or used in partition walls, because they came from over the arch in the kiln and so near to the fire that they became badly twisted. Being so near the fire in the baking they vary widely in color. Looked at separately, the individual brick are almost hideous, but, when put together in walls, the colors blend most effectively and harmonize with the planting.

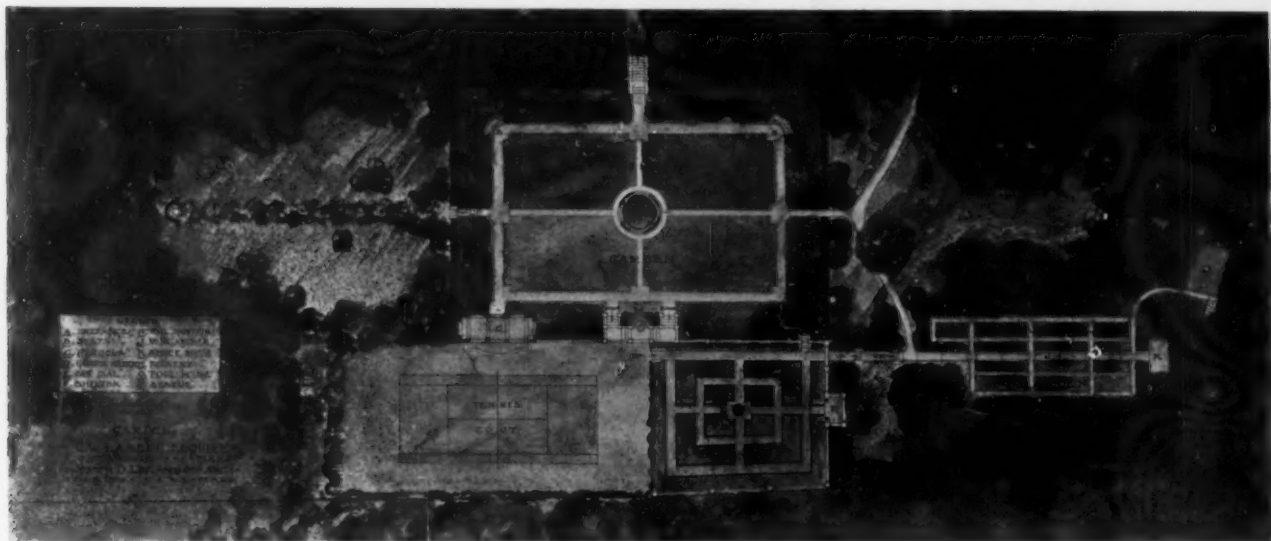
The accompanying photographs show the manner in which the odd brick were utilized, but, unfortunately, do not give any idea of the rare coloring. The pictures do show, however, what rapid work can be done in garden construction. Less than a year before the photographs were taken there was no garden on the site at all.

The design of the garden was limited by certain fixed conditions, viz., a privet hedge bordering three sides of a vegetable garden, 150 feet by 80 feet, and near it, on a lower level, an old gravel tennis court. Both of these were to be preserved. The owner expressed himself very firmly about not wanting the hedge harmed in any way.

The vegetable garden was on a level 5 feet higher than the tennis court, and, between the two, was an old retain-

ing wall. With this situation the architect worked out the following general scheme: The vegetable garden, which had a slope of about 5 feet to the south, was leveled and made into what is now called the upper garden. This has grass panels and is surrounded with an herbaceous border and the old hedge. Upon the old retaining wall was placed a 3-foot paneled wall made of the multi-colored brick; a handsome wall fountain and steps were built to the lower level. Here was the old tennis court on the right, to which was added, on the left, a rose garden, with high walls of the unusual brick. In order not to have a 5-foot bank on the north side of the garden, the hedge, which must not be damaged, was dropped 3 feet. This ticklish job was done without the loss of a single plant. A 2-foot terrace was then built, in front of which was planted the herbaceous and perennial border of the paneled garden. In back of the hedge the ground was graded into the natural slope toward the house. The whole garden is nestled amid fine trees, and for the background on the north of the paneled upper garden are large chestnuts, oaks, and pines on slightly rising ground. In addition to lowering the hedge, whole trees, some of them 35 feet high, were moved into harmonious positions.

It will be noticed in the photographs that the bond of the brickwork changes throughout in order to make the surfaces more interesting, being Flemish in the upper garden and English in the rose garden. In fact, the garden is full of pleasant surprises and no matter which way one turns one is always coming upon new patterns in brick design which show they have been carefully studied and



PLAN — THE LASELL GARDENS.
Joseph D. Leland, Architect.

harmonize effectively with one another. A three-quarter inch joint has been used throughout.

Let us take a short stroll into the garden. Passing from the house down a short gentle slope, shaded with big trees, and then down an easy flight of brick steps, laid in pattern and flanked by two large Roman urns, we enter the paneled upper garden. Directly in front of us, in the center of this upper garden, is a circular, stone-coped lily pond with a small fountain. In two of the corners of the upper garden are marble seats in the form of quarter circles.

Not being able to see it all at once, the garden draws you on, and, crossing through the middle of the upper portion, we come to a picturesque wall fountain, around which are two flights of steps. The pictures describe the wall fountain, but they do not bring out the fine coloring of the brick or the delicate yellow and rose tints of the stucco

work around the lion's head, from whose protruding tongue the water falls in the shape of a fan into an Italian well-head. The water then overflows from the well-head into another basin at the bottom.

Before going down to the lower garden, the pergola to the right is of interest. This is on the line of the old retaining wall and is at the southwest corner of the upper garden, while its balcony overlooks the tennis court. This balcony is cantilevered with steel beams encased in concrete, the floor is inlaid with a brick pattern, and the roof is of red tiles which can be seen from inside the pergola. It makes a charming resting spot, and yet has the advantage of being a good viewpoint. Returning to the wall fountain, and passing down one of the two flights of ten steps which meet on a platform below, the brick-work again attracts attention. The back of the fountain



THE UPPER GARDEN.



GARDEN STEPS



WALL FOUNTAIN

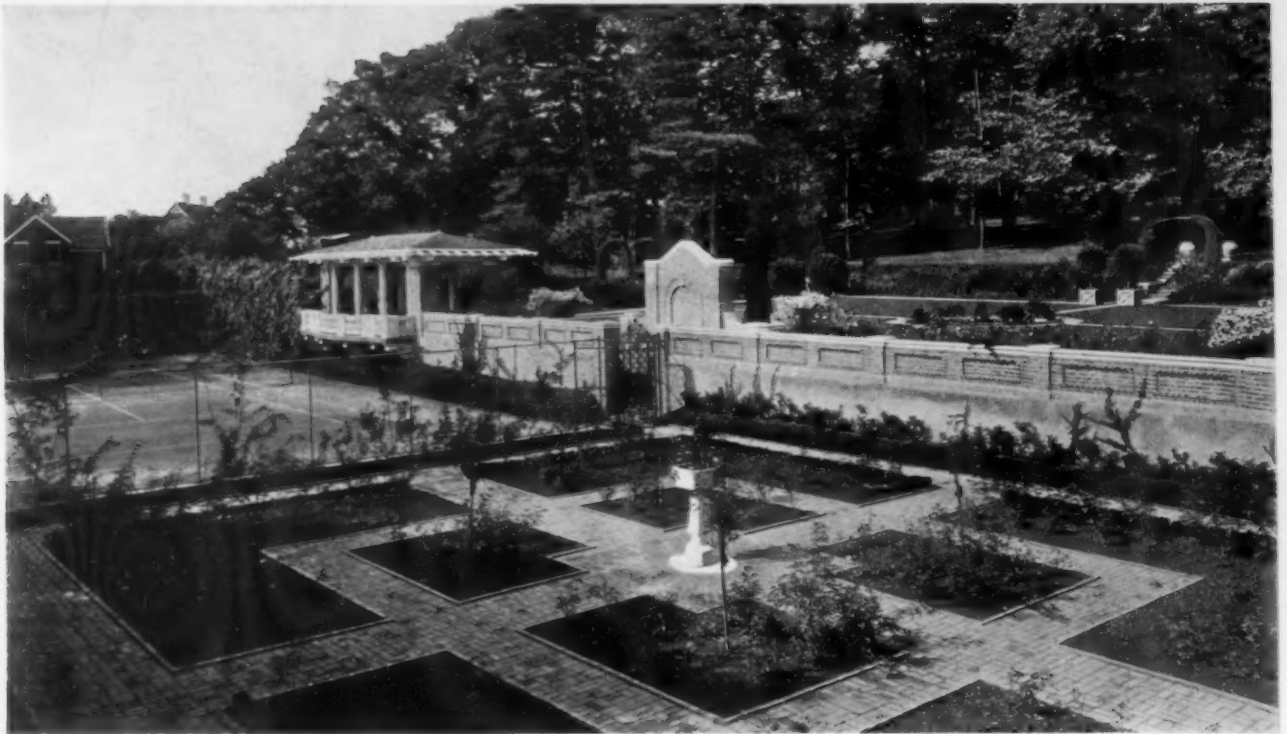


PERGOLA



GATE TO ROSE GARDEN

THE LASELL GARDENS, WHITINSVILLE, MASS.
JOSEPH D. LELAND ARCHITECT



GENERAL VIEW FROM ROSE GARDEN.

has a recessed brick arch and panel, in which the brick are laid in a cross pattern. These brick are a deep purple. On this wall surface is a bronze grotesque dwarf who is blowing bubbles out of a tiny pipe. This pipe, in reality, is a sanitary, bubbling drinking cup where the tennis players can find cold water near at hand.

At the foot of the steps one can either pass into the tennis court on the right, or, mounting two steps and passing through a handsome wrought-iron gate, go into the delightful rose garden. The walls of this lower garden are $7\frac{1}{2}$ feet high and are made of the picturesque many-colored brick. The pathways in the garden are paved with Harvard brick, the kind used in the walls being too

rough and irregular to be comfortable for walking. On one side of this garden is a charming little recessed pergola. From the rose garden a flight of steps and a skedaddle path lead through the border planting into the upper garden, and another gate, under an arch, leads to an annual and bulb garden, which is not shown in the pictures.

The garden is not yet completed. Vases for the top of the walls, a sun-dial, statues at the end of several vistas, a rockery and grape arbor, which all form a part of the general plan, have yet to be put in place and much of the planting has yet to be done. The photographs, therefore, show the rather remarkable results of less than one year.



CORNER OF ROSE GARDEN.

The Unit Power Plant for Isolated Buildings and Small Groups.

PART II. — TYPES OF APPARATUS AND PLANT DESIGN.

BY CHARLES L. HUBBARD.

THE architect who is interested in the subject of power plant installation should provide himself with a collection of catalogues of the best makes of apparatus. These contain a considerable amount of practical data, and it has seemed best to refer the reader to this source of information rather than to reproduce the same matter here.

Boilers. The boilers used in power and heating work are classed as fire-tube and water-tube boilers, according to their construction.

The horizontal return tubular boiler, with a brick setting, is the type of the former most frequently used. It is so designed that the hot gases pass through the tubes which are enclosed in a shell and surrounded with water. This form of boiler is used extensively for heating work, and also for power to a considerable extent. It has a large water capacity, is simple in construction, requires less head room than some types of water-tube boilers, and is also lower in cost. As boilers are rated on the amount of heating surface which they contain, there is a tendency on the part of some makers to crowd in too many tubes for the best efficiency.

Specifications may be obtained from the Hartford Steam Boiler Inspection and Insurance Company of Hartford, Conn., giving the principal details of construction for boilers of different sizes. Copies of these should be placed on file by the architect who wishes to take charge of this part of the equipment of his building.

The principle of construction of the water-tube boiler is the reverse of the fire-tube, as the name implies. In this case, the water is inside the tubes, which are surrounded by the hot gases. This type of boiler is used extensively for power purposes for various reasons, among which its greater safety is one of the most important. This is due to the division of the water into small masses, which tends to prevent serious results in case of rupture. Other advantages of this particular form of construction are, the large proportion of heating surface exposed directly to the fire, which results in an increased transmission of heat and a more rapid circulation of water, ample draft area, and a slower movement of the gases over the tubes. As to efficiency, there is probably very little difference between the two types when equally well designed and cared for. In city buildings, and others where there are many occupants, the water-tube boiler is usually preferred for power work on account of its greater safety at higher pressures. There are many different forms of water-tube boilers designed to meet almost any requirement as to floor space and height for a given power. Much valuable data relating to capacity, dimensions, settings, etc., will be found in the catalogues of the various manufacturers.

Steam Engines. Steam engines are classified partly according to their mechanical construction and partly with reference to speed. The high-speed single-valve engine and the medium-speed four-valve engine are the types

most frequently used for isolated plants. High-speed engines have come into general use for driving electric generators on account of the desirability of connecting the generator directly with the shaft of the engine. The moderate-speed engine is more economical in the use of steam, and may also be direct-connected to a generator of suitable design.

The principal waste in an engine is due to cylinder condensation, and where steam economy is of great importance this may be overcome, to some extent, by the use of multiple expansion engines. In a *simple* engine, the total expansion takes place in a single cylinder, while in a *compound* engine two cylinders are employed, so arranged that the steam first enters the high-pressure cylinder, expands a certain amount, and then exhausts into the low-pressure cylinder where expansion is completed.

Compound engines are of two general forms, the *tandem* and *cross-compound*.

In the former, both pistons are placed upon the same rod, with the axes of the cylinders in line. Only one set of reciprocating parts is required, and except for the two cylinders, the appearance is the same as that of a simple engine. Cross-compound engines are made up of two complete machines, except for the main shaft and fly wheel, which are common to both. One advantage which this form has over the simple and tandem engines is that the cranks may be set at ninety degrees from each other so that there is no "dead center." The cross-compound engine is more expensive to make and requires a larger floor space than the tandem engine, hence it is not so well adapted to the isolated plant as the latter. In triple-expansion engines the steam is expanded in three stages instead of two. Three cylinders are usually employed, the high, intermediate, and low, with the cranks one hundred and twenty degrees apart. Engines are made both vertical and horizontal in form. While the former requires less floor space than the latter, it is more difficult to balance the reciprocating parts, and the horizontal type is usually preferred for high-speed work on this account. The selection of an engine for any particular location depends upon the conditions under which it is to operate. For sizes under 100 horse power, and for larger sizes where the exhaust is to be utilized for heating, the simple non-condensing engine operating under a pressure of 80 to 90 pounds is generally used.

The best type as regards speed depends much upon the available room. In office buildings and similar locations where floor space is valuable, the high-speed engine is used almost exclusively. For central lighting plants in connection with public institutions, where floor space is not so limited, the moderate-speed engine is a good type. When all of the exhaust can be utilized for heating purposes there is of course no advantage in installing a high-priced engine for the sake of economy in steam consumption, but if conditions are such that only a comparatively small part

of the exhaust can be used, or if the heating season is short, it may be an advantage to install compound engines, at an increased cost of perhaps thirty per cent over that of simple engines. The steam consumption in the case of high-speed, non-condensing engines at full load is from twenty to thirty per cent less for the compound type, while the increase in fuel consumption required to raise the boiler pressure from 80 to 125 pounds is only about one per cent. In order to secure satisfactory results with a compound engine it should always be operated within its economical range, which is from fifty per cent load to full load, and under a steam pressure of 100 to 125 pounds.

Steam Turbine. Steam turbines are of two general types, the *impulse* and *reaction*. Practically all of those built in the smaller sizes for isolated plant work are of the former type, in which the steam is blown in jets against the vanes of a revolving wheel. Turbines are especially adapted to the driving of electric generators and centrifugal pumps, and are also used to some extent in connection with ventilating fans. The conditions under which they are used are practically the same as for reciprocating engines.

Gasolene Engines. As previously stated, these are particularly adapted to cases where power only is required, and where it is desired to simplify the equipment as much as possible.

A general idea of the different types of both turbines and gasolene engines can best be obtained from a study of the catalogues of some of the best makes.

Condensers. Condensers are of two general types, the *surface* condenser, where the exhaust steam is condensed by contact with a series of tubes through which cold water is forced, and the *jet* condenser where the steam mingles with the water and is condensed by direct contact. Condensers are not used in connection with combined power and heating plants, except in some cases during the summer, where condensing water can be obtained from a near-by river or water front free of cost, except for pumping. In large central stations condensing equipment is always provided. The weight of condensing water required in connection with reciprocating engines is about thirty times the weight of steam condensed for a jet condenser and thirty-five times for a surface condenser.

Feed-Water Heaters. A feed-water heater should form part of every power plant equipment, no matter how small, for use at such times as the steam from the engine is exhausted outboard, as by this arrangement about one-seventh of the heat contained in the exhaust may be saved. Furthermore, it will add to the life of the boilers if the water is heated before being fed into them. In the winter season, when the exhaust is used in the general heating system, the feed-water heater may be cut out of service and the make-up water fed into the receiving tank with the condensation from the radiation. Feed-water heaters are of two forms, the *open* and *closed*. In the first of these the water and steam mingle in a common chamber, which also serves as a receiving tank for the return of condensation from the heating system. In the closed heater the steam and water are separated the same as in a surface condenser. There is no particular difference in the efficiency of the two types, but the open heater has the advantage of acting also as a purifier where the water contains certain scale-forming salts of lime and magnesia.

Feed Pumps and Injectors. The boilers are commonly fed by means of a direct-acting steam pump, supplemented by an injector for use in case of accident or repairs to the pump.

Boiler feed pumps are of the *piston*, *inside plunger*, and *outside packed plunger* types. The first of these is commonly used where the water is free from grit, the second where it is liable to be slightly gritty, and the third where conditions are such that there is likely to be considerable wear, making it necessary to pack the plunger at frequent intervals. With the latter type, this can be done without dismantling the pump. In the case of heating systems, automatic governors are used which start and operate the pump as condensation accumulates in the receiving tank.

Special Apparatus. Steam separators should be provided in the supply pipe to each engine for removing the entrained water from the steam before it enters the cylinder. Oil separators should also be placed in all exhaust lines leading to the heating system in order to prevent cylinder oil from the engine being returned to the boilers with the condensation.

In exhaust heating systems the maximum pressure should be limited by a back-pressure valve placed in the outboard exhaust pipe. This is a special form of relief valve which may be set to open when the desired pressure is reached and discharge the surplus exhaust outboard. On the other hand, a live steam connection should be made with the heating main, the same being provided with a pressure reducing valve, which opens and admits live steam to the system whenever the exhaust proves insufficient to supply the needs for heating purposes. These two valves work in connection with each other to maintain a supply of steam within the heating system which shall automatically meet the varying demands at a constant pressure. Separators are so constructed that they may be connected into either vertical or horizontal pipes, as most convenient. They are drained by traps which discharge the condensation from the steam separators into the receiving tank, from which it is returned to the boilers, while the drip from the oil separator is turned into the sewer.

Both back-pressure and reducing valves are adjustable, although the latter are limited in range; for this reason, when specifying a valve, the initial and final pressures should be stated so that it may be equipped with the proper springs or weights for the special conditions under which it is to work.

Steam traps for drainage purposes are made for both high- and low-pressure work, and the conditions under which they are to operate should always be specified, as a smaller discharge valve is employed when used under high pressure. Water-line traps, so called, are employed in combined power and heating plants where it is desired to seal the main return pipes with water. In the case of a low-pressure system, where the condensation is returned by gravity, this is done by carrying the pipes below the water line of the boiler; but with high-pressure boilers, this is impossible, and the water must be raised in the returns by means of a special form of trap. While the subject of ventilation in general is not included in the present series of articles, a word should be said regarding equipment for the ventilation of the boiler and engine rooms. It is customary in the case of boiler rooms to blow in cool outside air, discharging the same downward in

front of the boilers through galvanized iron pipes with flaring outlets. Discharge ventilation is largely through the furnaces, as a considerable proportion of the air thus supplied is needed for combustion.

Engine room ventilation may be partly by the exhaust method, if means are provided for the entrance of cool fresh air to replace that which has been removed. Centrifugal fans driven by direct-connected motors are commonly used for this class of work.

Cost of Equipment. The cost of power-plant equipment will, of course, vary considerably under different conditions, but may be approximately estimated by use of the following table.

TABLE VI.

Kind of Equipment.	Cost Installed.
Horizontal Tubular Boilers.....	\$10-\$12 per B.H.P.
Water-Tube Boilers.....	12- 15 " "
High-Speed Simple Steam Engines ...	12- 15 " I.H.P.
Medium-Speed Compound Engines.....	17- 21 " "
Gas Engines.....	30- 36 " "
Oil Engines.....	45- 50 " "
Dynamos — Direct-Connected.....	13- 16 " Kw.
Switchboard.....	5- 10 " "
Foundations.....	5- 10 " "
Steam Fitting, including Auxiliary Apparatus, such as Feed-Water Heater, Separators, Exhaust Head, Tanks, Pumps, etc.....	15- 18 " I.H.P.

Tables of this kind usually give the cost of all equipment in kilowatts. This is convenient for plants generating electricity only, but for the combined power and heating plants, and where power is required for other purposes, such as refrigeration, etc., the cost per horse power is also convenient.

Plant Design. There are two general conditions under which isolated power plants are installed. The first of these being where the location is remote from a central electric station, so that it must be provided anyway, regardless of competition or of its relation to the heating system.

The second condition relates to cases where the building, or group of buildings, is in a territory served by a central station, and where there is a question as to whether it will be more economical to purchase electric current from the local company or generate it on the premises. The desirability of the latter method will depend largely upon the relation of the exhaust steam to that required for the various heating purposes, and also upon the amount of exhaust which may be utilized in this way. Although there may be sufficient exhaust steam in the course of twenty-four hours to do all, or a considerable portion, of the heating, if it be produced within a period of a few hours so that a large part of it must be thrown away, it is evident that the advantage will be much less than when the hourly balance of supply and demand is more nearly equal. In computing cost of operation, the *available* exhaust from the power plant is simply that which can be utilized as fast as it is discharged from the engines, for it is not possible in practice to store it for future use.

In order to determine the available exhaust in any particular case, make out a table like the following, which will show the relations between steam supply and demand for each hour in the day.

TABLE VII.

1	2	3	4	5	6	7
Hour of the day.	I.H.P. of engine.	Total exhaust, pounds per hr.	Steam required for heating, pounds per hr.	Available exhaust, pounds per hr.	Exhaust wasted, pounds per hr.	Live steam required, pounds per hr.
---	---	---	---	---	---	---
---	---	---	---	---	---	---

In the above, column No. 1 gives the hour of the day, column No. 2 the indicated horse power of the engine necessary to produce the average power required during that hour. This is obtained approximately by estimating the lights and motors in use and reducing electrical energy to indicated horse power at the engine, as described in a previous article. The quantities in column No. 3 are found by multiplying the corresponding horse powers in column No. 2 by the water-rate of the engine and taking eighty per cent of the result. Column No. 4 gives the total amount of low-pressure steam required for all heating purposes during this hour, including the warming of building, ventilation, hot-water heating, etc. Column No. 5 shows what part of the exhaust may be utilized for heating purposes. If No. 3 is greater than No. 4, place the difference in column No. 6; and if it is smaller, place the difference in column No. 7.

The most difficult quantities to estimate are those in column No. 4, as the steam required for both heating and ventilating changes with the outside temperature, which varies from day to day and from hour to hour throughout the heating season. For ordinary work a table like the above should be prepared for an *average day* representing each month of the year. This may be made up by consulting the weather charts for two or three years back, and giving to each average day the average temperature of the month for which it stands, as obtained from the weather charts. Actually the temperature will vary from hour to hour, but it will be sufficiently accurate for ordinary work to assume a constant temperature throughout the day. The methods given for computing the weight of steam for heating and ventilation are based on an outside temperature of zero. It is evident that as the temperature rises the steam requirements will become less. Theoretically, the heat loss from a building is proportional to the difference between the inside and outside temperatures. If the amount of heat given off by the radiators could be regulated to exactly balance the heat loss from the building, it would be a simple matter to estimate the weight of steam required. In practice, however, it is not possible to do this, as the regulation in different buildings will vary from keeping steam on the radiators and opening the windows, to one of the more or less efficient systems of automatic temperature control. Table VIII has been prepared for different systems for varying outside temperatures, and will be found useful in approximating the steam required for different seasons of the year. To use, first compute the weight of steam required for zero weather by the methods given, and multiply the result by the factor in Table VIII corresponding to the outside temperature and

type of system used. The factors under column "A" are for the ordinary low-pressure gravity system; "B" for a vacuum system; "C" for a forced hot-water system; and "D" for a system provided with automatic temperature regulation, either steam or hot water.

TABLE VIII.

Outside Temperature.	A	Factors. B	C	D
0°	1.00	1.00	1.00	1.00
5°	.97	.95	.94	.93
10°	.94	.91	.89	.86
15°	.92	.87	.83	.79
20°	.89	.83	.77	.72
25°	.86	.79	.72	.65
30°	.83	.75	.66	.57
35°	.80	.70	.60	.50
40°	.77	.66	.54	.43
45°	.74	.62	.49	.36
50°	.71	.57	.43	.29
55°	.68	.53	.37	.21
60°	.66	.49	.31	.14
65°	.63	.44	.25	.07
70°	.60	.40	.20	.00

Example. If a building contains 5,000 square feet of direct steam radiation, not provided with means for automatic temperature regulation, the following amount of steam will be required per hour for different outside temperatures, as shown below:

Outside Temp.	Steam per Hour.
0°	$5000 \times .2 \times 1.0 = 1,000$ lbs.
10°	$5000 \times .2 \times .94 = 940$ "
20°	$5000 \times .2 \times .89 = 890$ "
30°	$5000 \times .2 \times .83 = 830$ "
40°	$5000 \times .2 \times .77 = 770$ "
50°	$5000 \times .2 \times .71 = 710$ "
60°	$5000 \times .2 \times .66 = 660$ "

The factors in Table VIII are based on the assumption that when the outside temperature is at zero, all of the radiation will be in use, and when it reaches seventy degrees above zero, sixty per cent of the radiation in the direct gravity system will still be turned on; and in like

manner, forty per cent in the vacuum system, and twenty per cent in the forced hot-water system. When automatic control is used, all radiators will be shut off at seventy degrees. These factors, except in column "D," will of course vary somewhat according to the care given to temperature regulation by the inmates of the building, but under average conditions will not be far from the figures given in the table.

The assumption that the temperature will remain constant throughout the "average day" will not of course be fulfilled under actual conditions, as it will vary from hour to hour according to the amount of sun and wind, and also with general changes of the weather. However, when the average weather of the entire month is taken into account it will be sufficiently accurate for all practical purposes to assume a constant temperature throughout the twenty-four hours.

In estimating the exhaust steam at different parts of the day, each item for which power is required must be taken up separately, and the time and amount considered together. For example: a refrigerating machine runs continuously, while motors for operating ventilating fans, elevators, etc., run only at certain hours of the day. The period for lighting varies both in length and time of day with the season, and must be estimated accordingly when computing the power required at different hours of the day. Also a certain allowance must be made for cloudy weather and for lights which are burned all day, when making up the total.

When making an estimate for comparing with central station rates, reduce all electric current required for different purposes, to kilowatt hours, for a year, and then compute the additional cost over that for heating alone, taking into account interest, taxes, depreciation, etc., on first cost of the power equipment, also additional fuel cost, miscellaneous supplies, repairs, and extra labor. From this data the average cost per kilowatt hour for the year may be found for comparison with the central station rates for the same service.

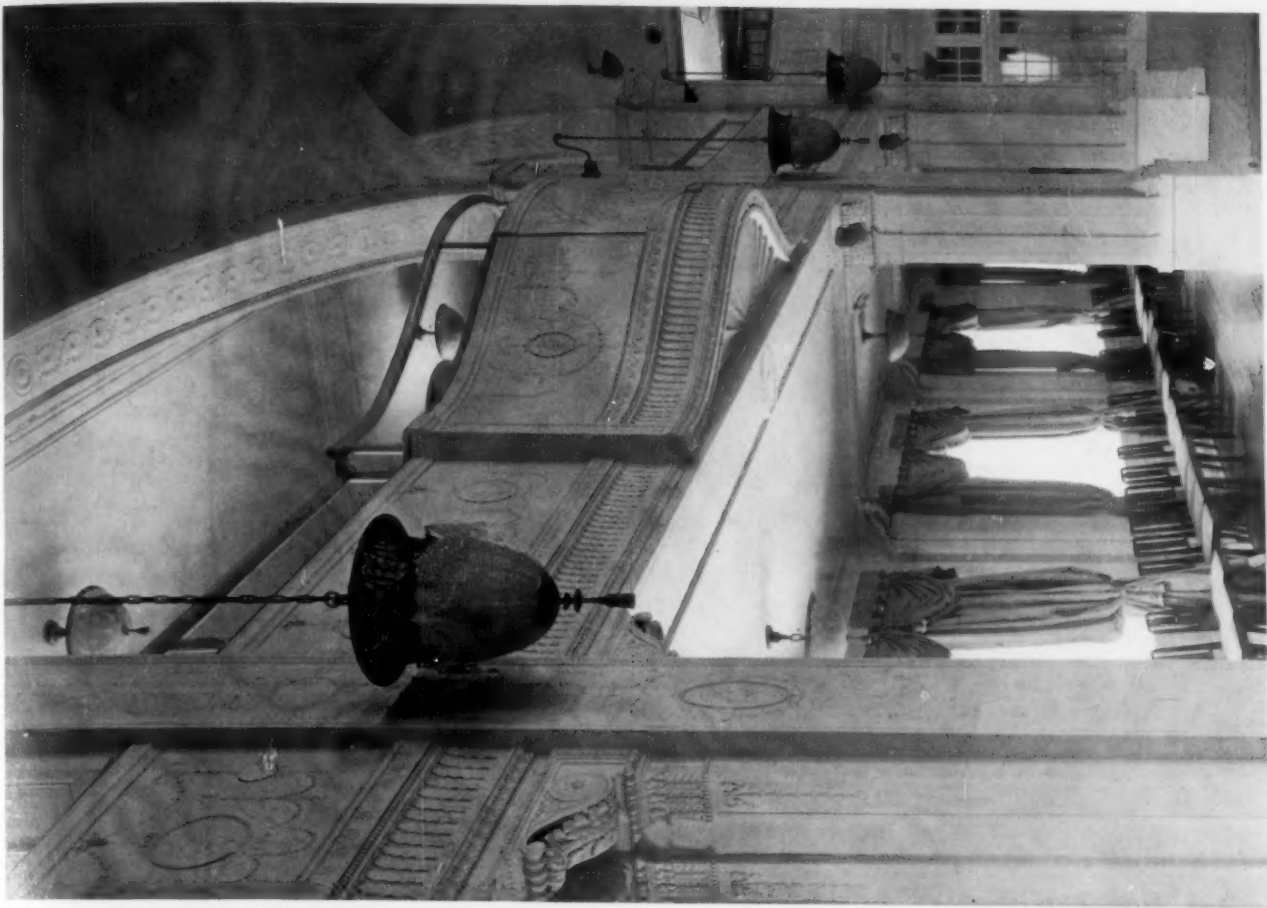
Mr. Hubbard will continue his paper in the April number. "Details of Design" will be discussed and followed by a paper on "Water Supply by Mechanical Means." — *The Editors.*

PALAZZO TACCONI,
BOLOGNA,
ITALY.



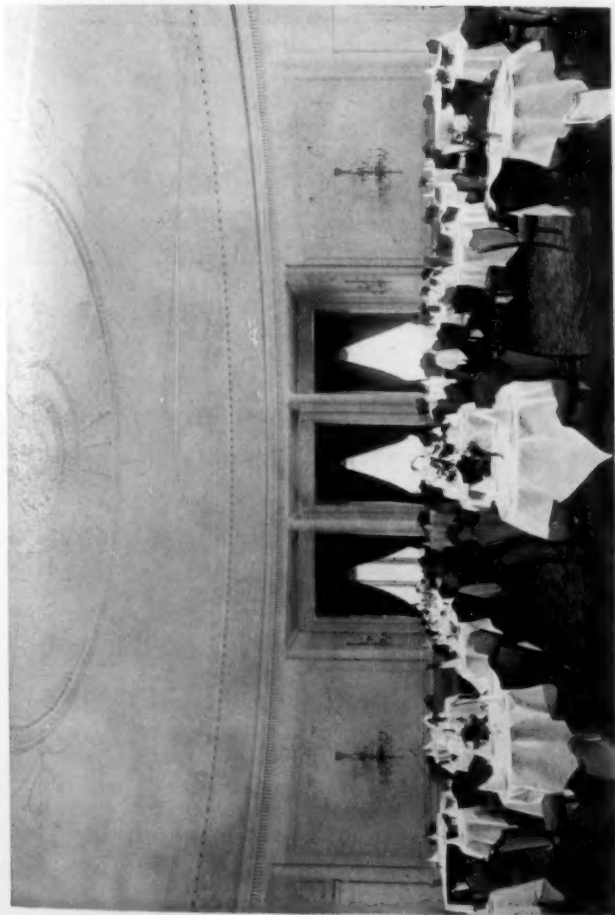
See page 38,
February Number,
for Measured Drawing.

UOLM

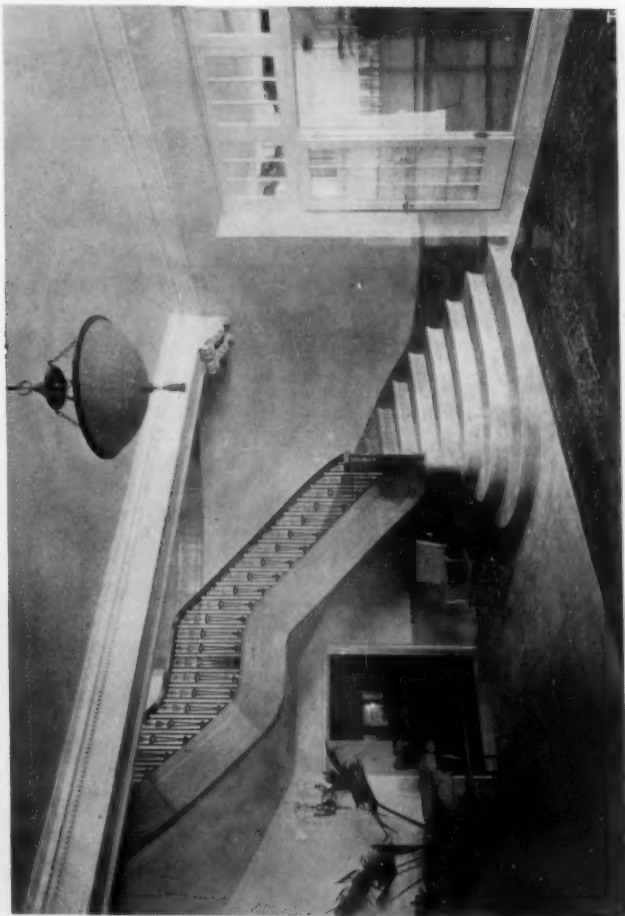


DETAIL OF BALL ROOM

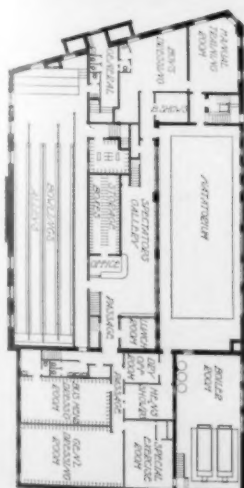
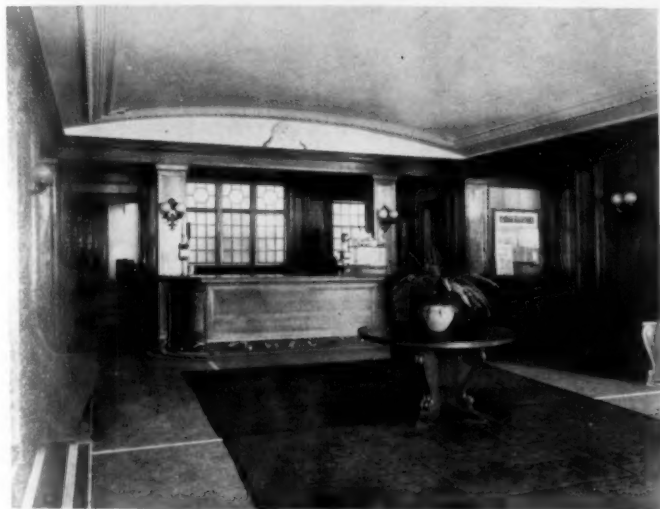
THE RITZ-CARLTON HOTEL, MONTREAL, CANADA
WARREN & WETMORE, ARCHITECTS



MAIN DINING ROOM



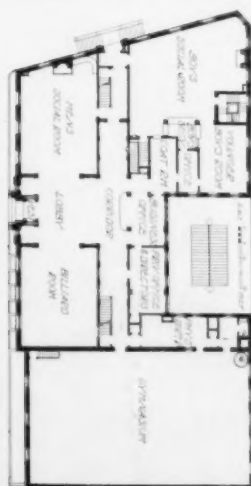
ENTRANCE FOYER



BASEMENT PLAN

Y. M. C. A.
BUILDING

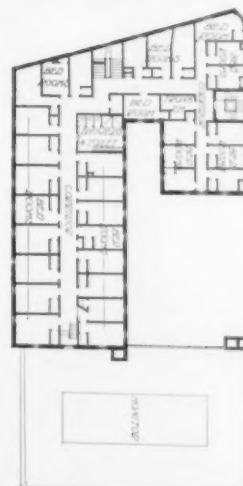
LAWRENCE,
MASS.



FIRST FLOOR PLAN

BRainerd & LEEDS
AND
O. A. THAYER

ARCHITECTS



THIRD & FOURTH FLOOR PLANS

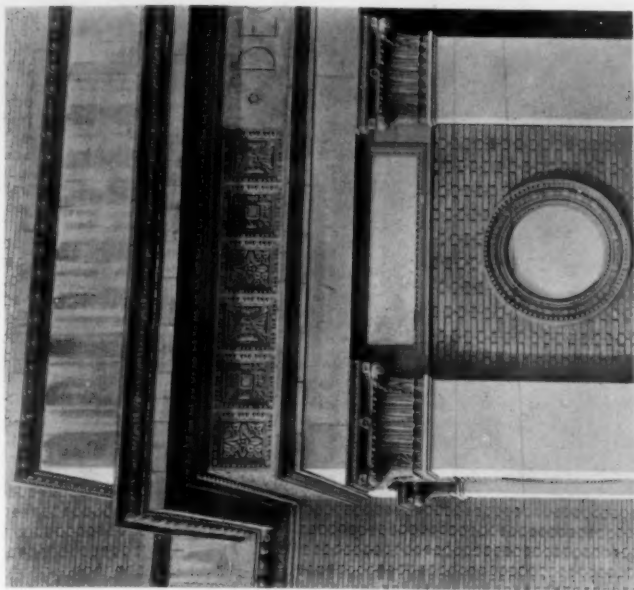
U of M

1000

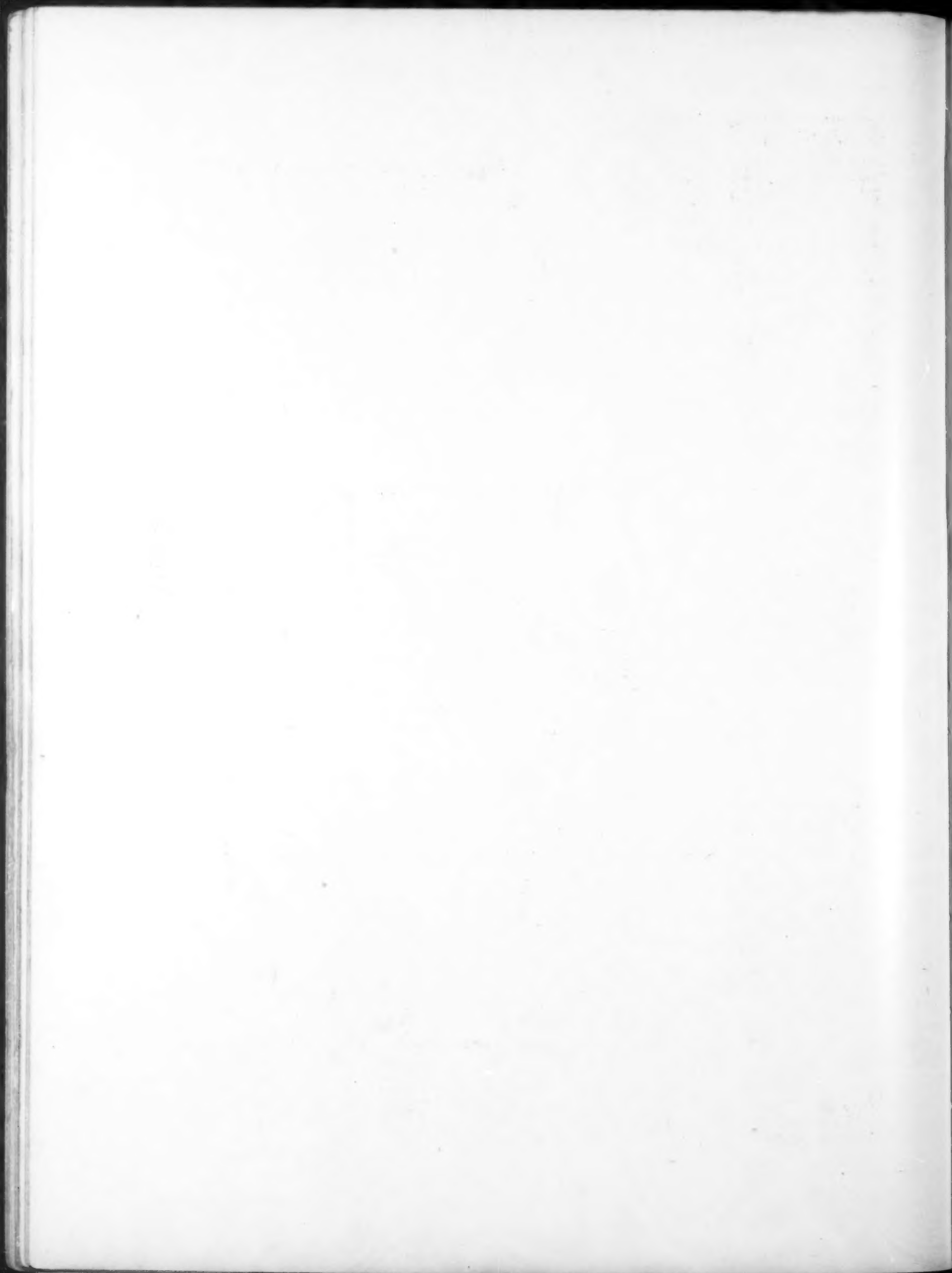


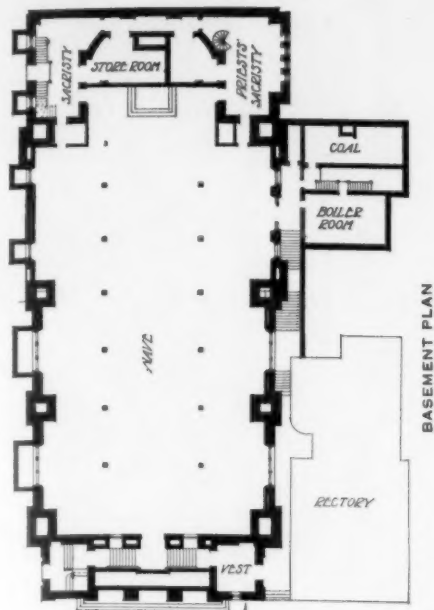
Y. M. C. A. BUILDING, LAWRENCE, MASS.
BRainerd & LEEDS AND O. A. THAYER, ARCHITECTS

UOLM

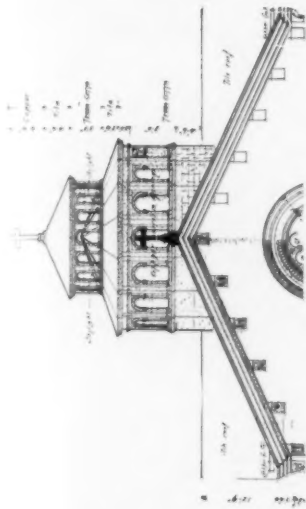


ST. PATRICK'S CHURCH, PHILADELPHIA, PA.
LA FARGE & MORRIS, ARCHITECTS

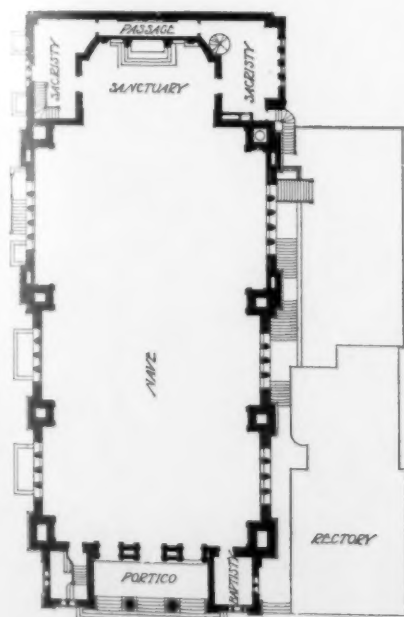




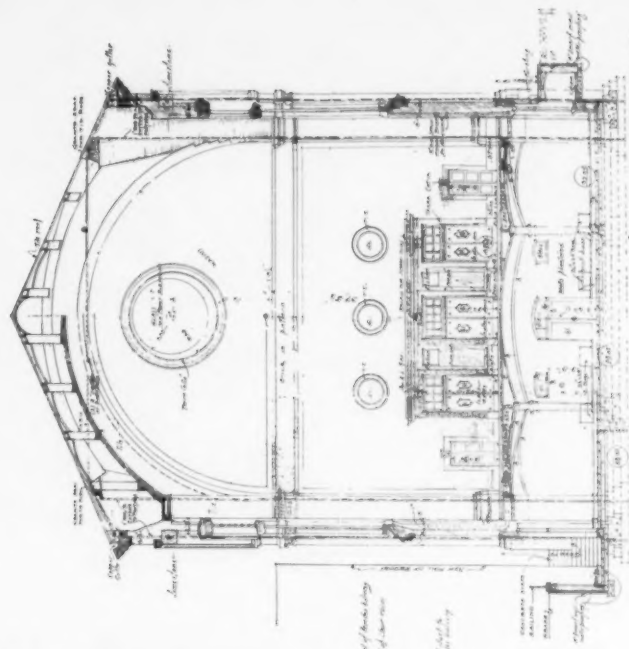
BASEMENT PLAN



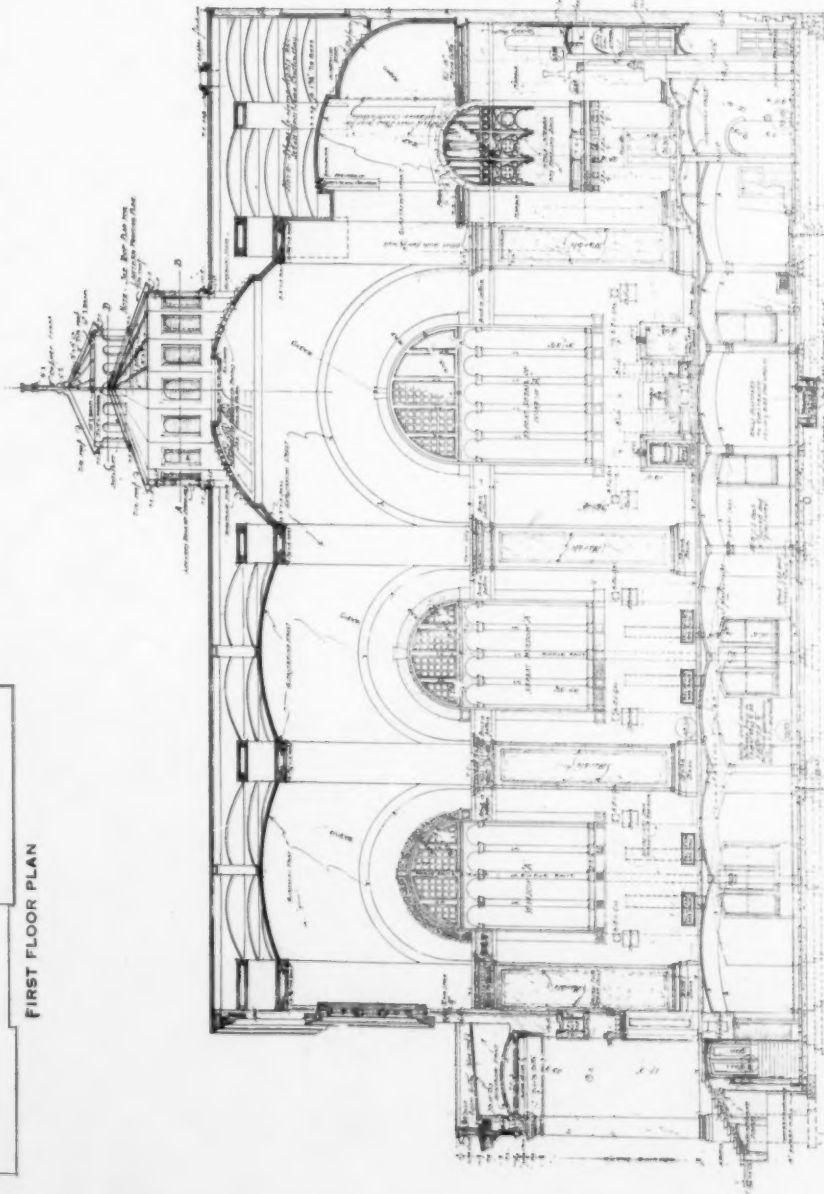
ELEVATION OF LANTERN



FIRST FLOOR PLAN



TRANSVERSE SECTION THRO' NAIVE
LOOKING FROM WEST STREET FRONT



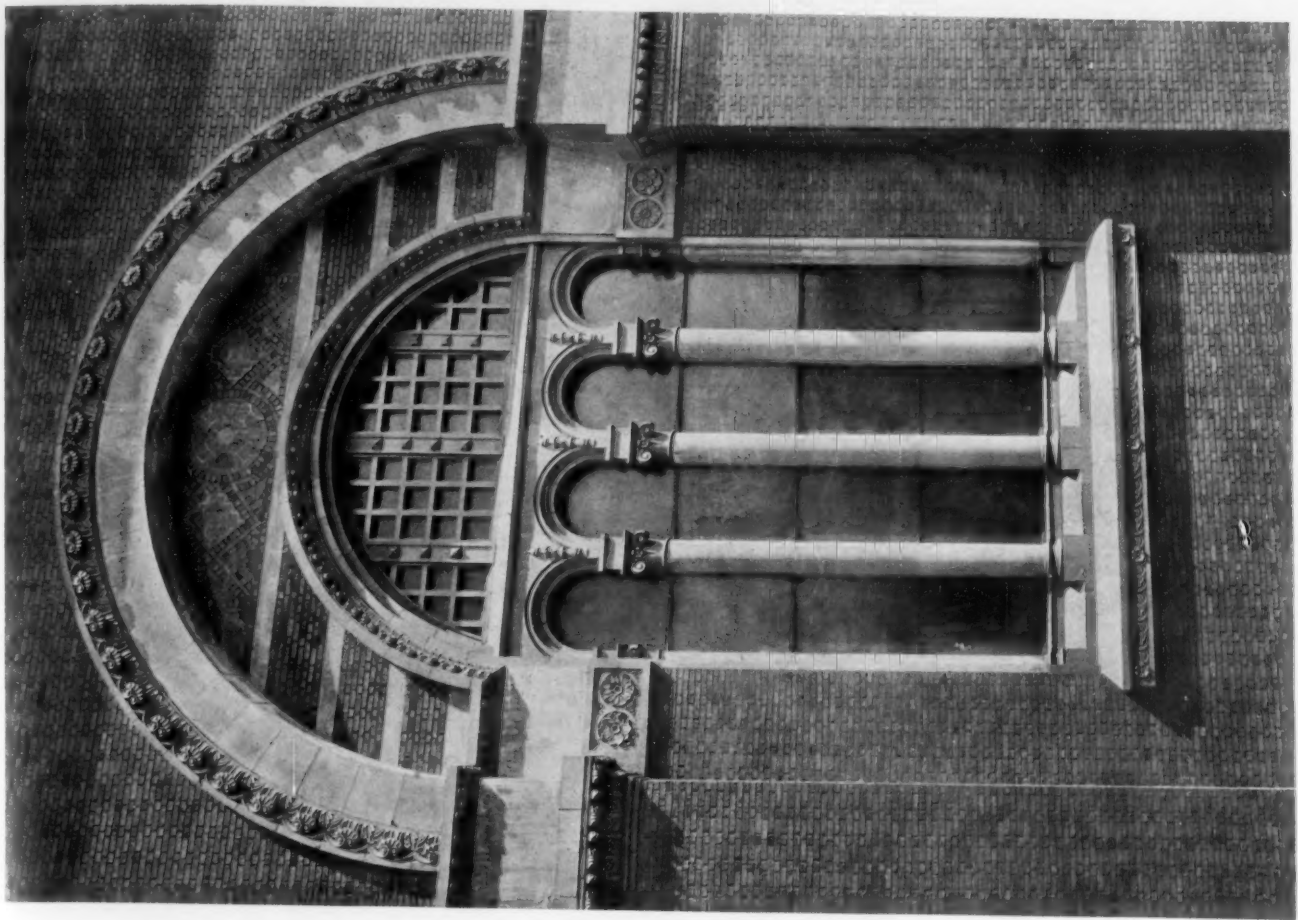
LONGITUDINAL SECTION
ON MAIN AXIS

ST. PATRICK'S CHURCH, PHILADELPHIA, PA.
LA FARGE & MORRIS, ARCHITECTS

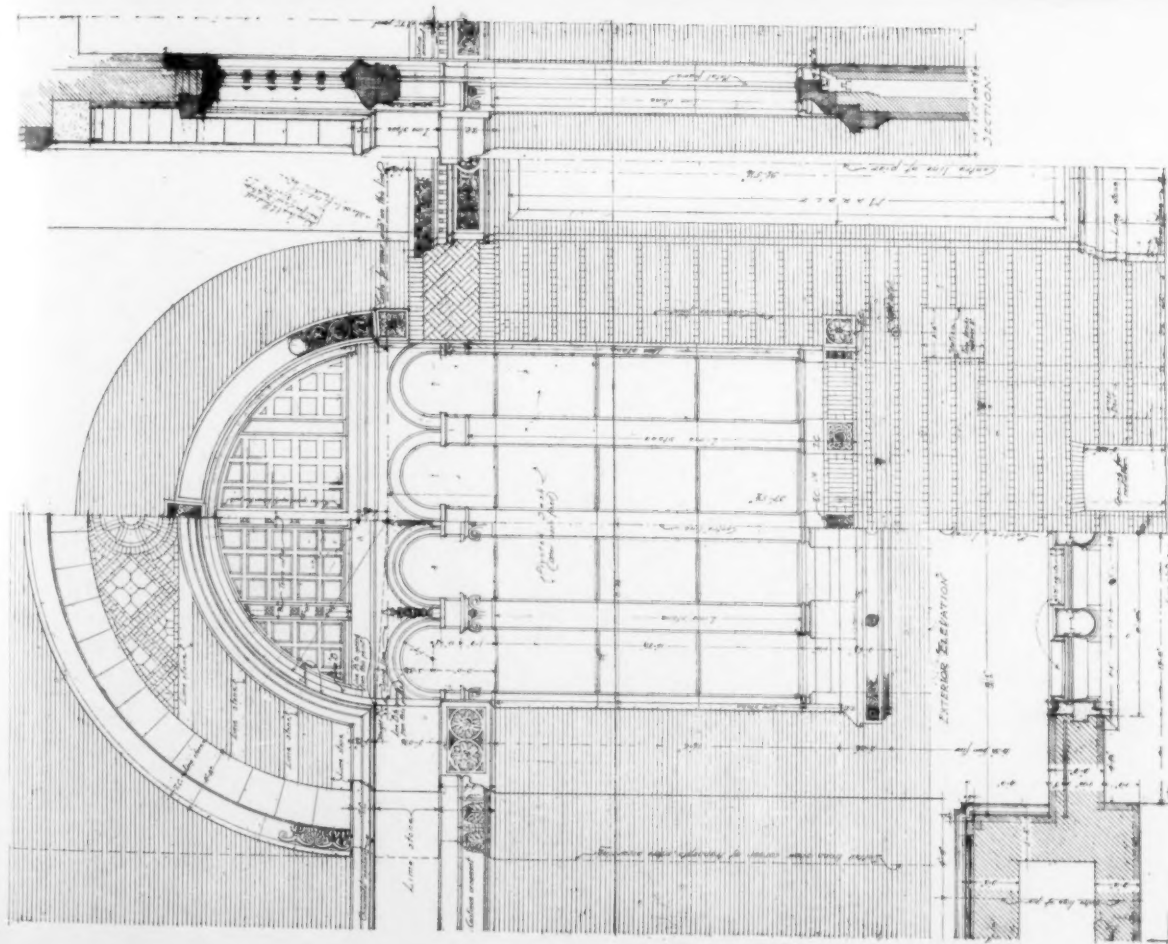
1000

1000

1000



DETAIL—WINDOW IN NAVE



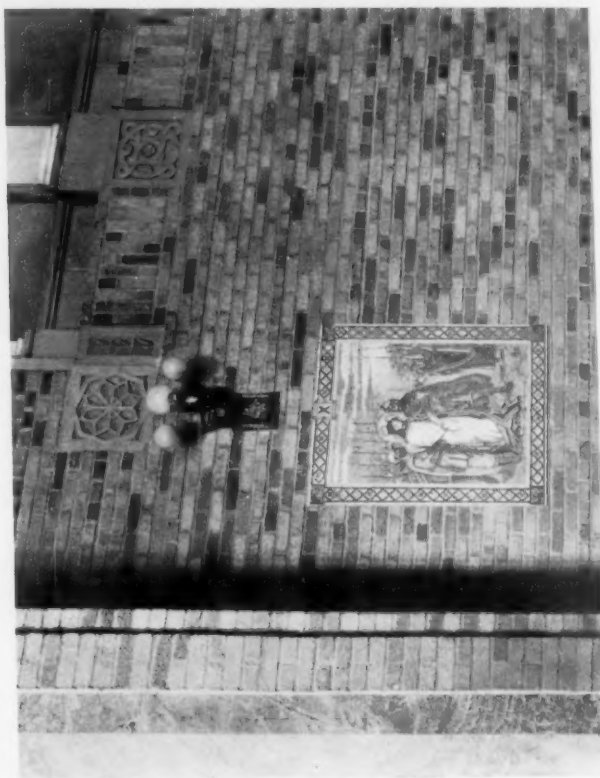
WORKING DRAWING—DETAIL OF WINDOW IN NAVE

ST. PATRICK'S CHURCH, PHILADELPHIA, PA.
LA FARGE & MORRIS, ARCHITECTS





LOOKING TOWARDS REAR



SIDE WALL TREATMENT

ST. PATRICK'S CHURCH, PHILADELPHIA, PA.
LA FARGE & MORRIS, ARCHITECTS



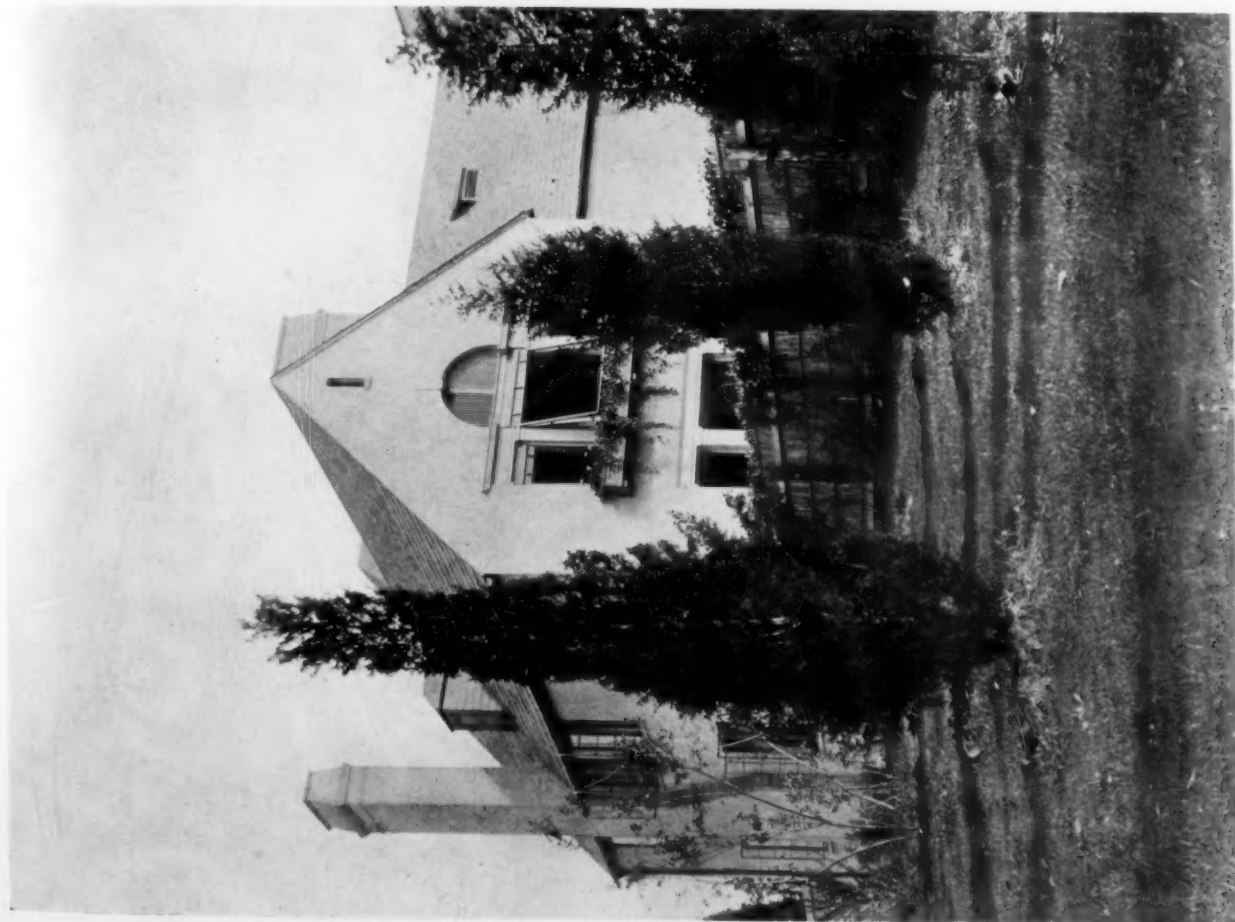
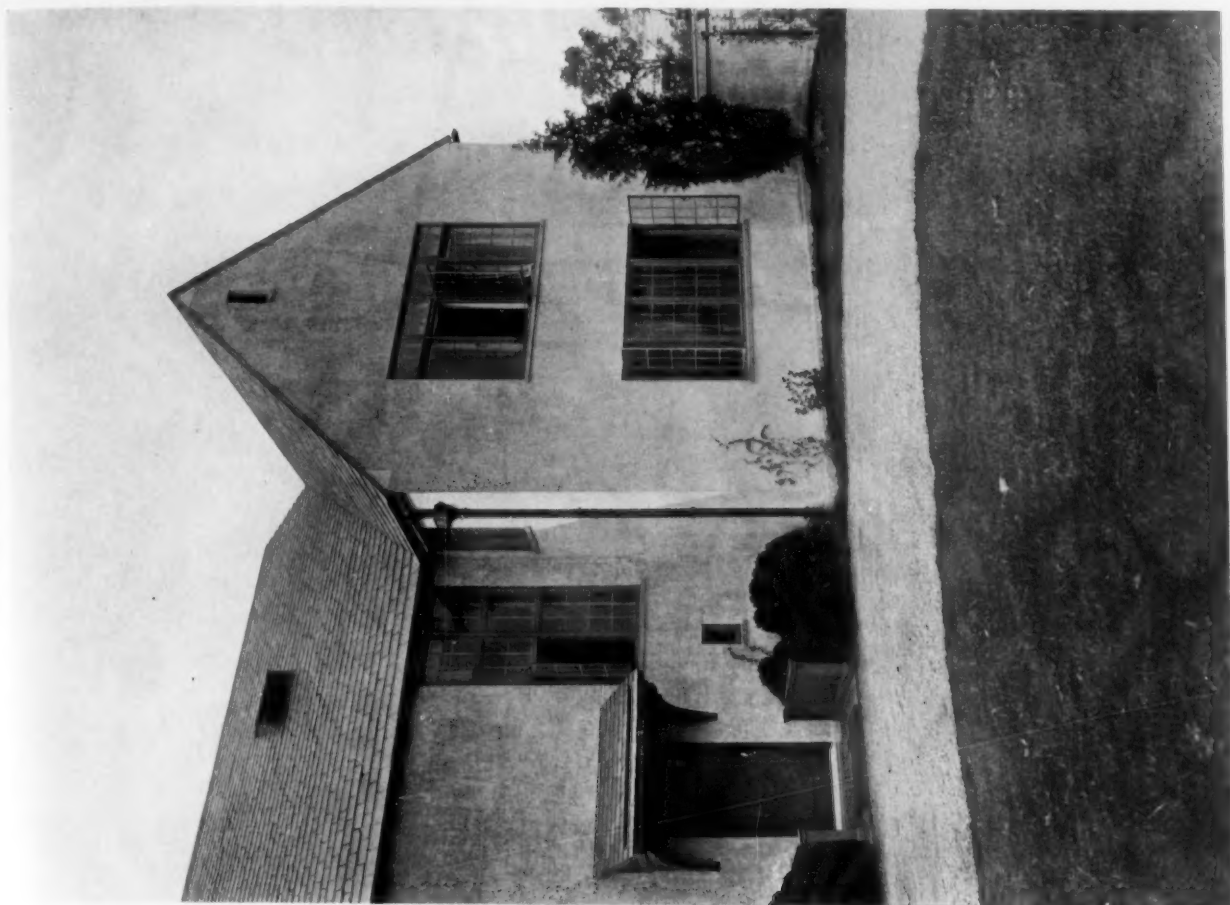
100
101
102
103
104



HOUSE AT BERNARDSVILLE, NEW JERSEY
EXTERIOR WALLS OF TERRA COTTA HOLLOW TILE
DELANO & ALDRICH, ARCHITECTS

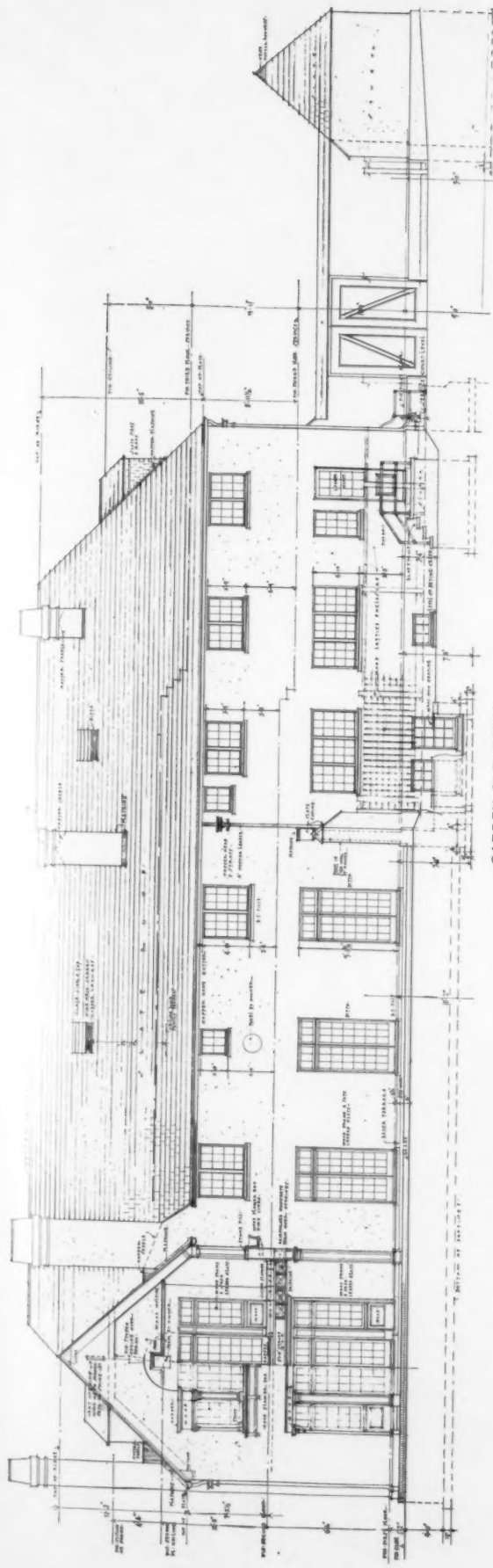
U. S. N.

UORM 5

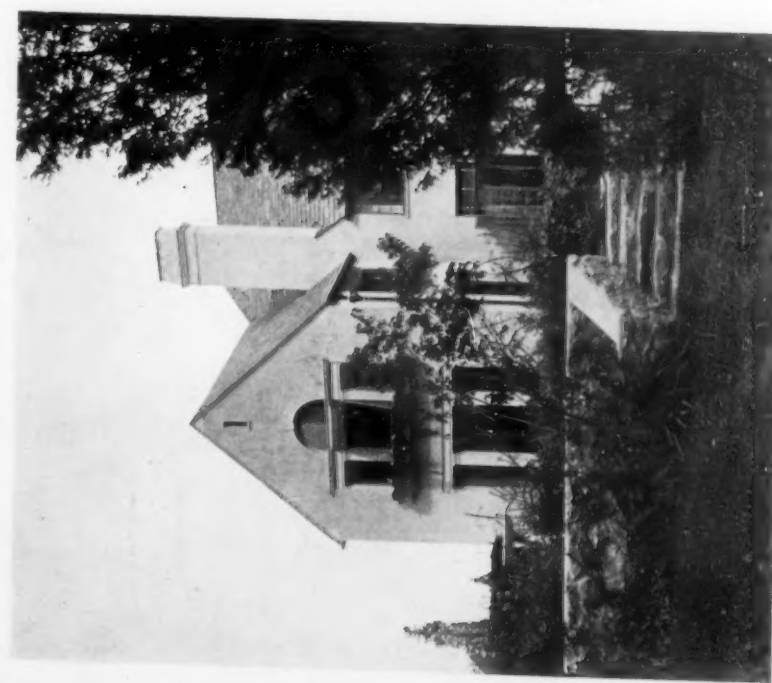
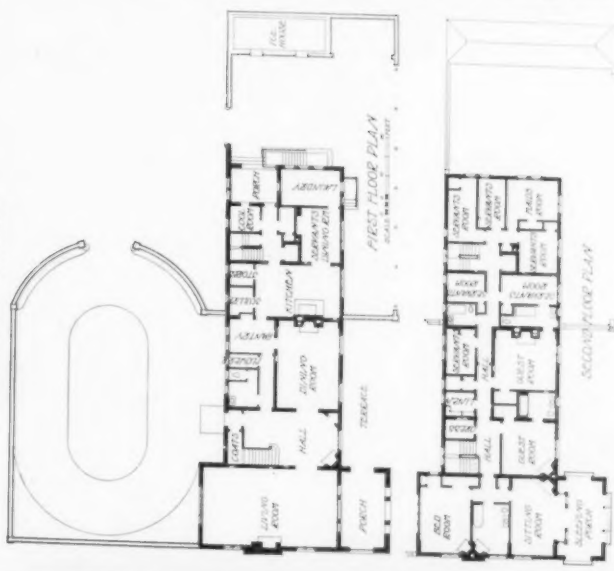
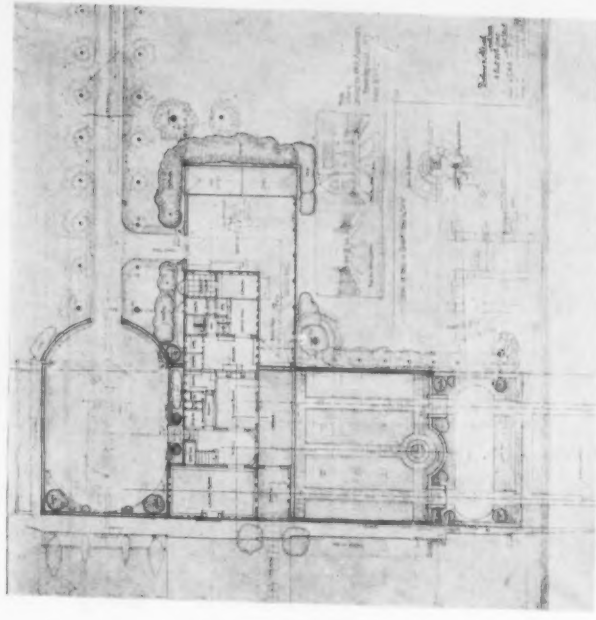


HOUSE AT BERNARDVILLE, NEW JERSEY
EXTERIOR WALLS OF TERRA COTTA HOLLOW TILE
DELANO & ALDRICH, ARCHITECTS

1726



GARDEN ELEVATION



HOUSE AT BERNARDVILLE, NEW JERSEY
EXTERIOR WALLS OF TERRA COTTA HOLLOW TILE
DELANO AND ALDRICH, ARCHITECTS





ENTRANCE COURT



FOYER

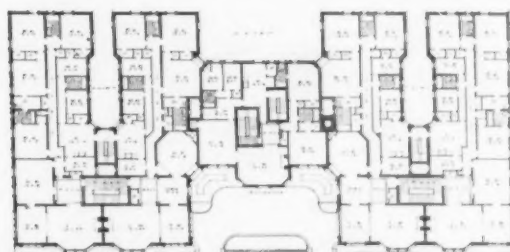


ENTRANCE DETAIL

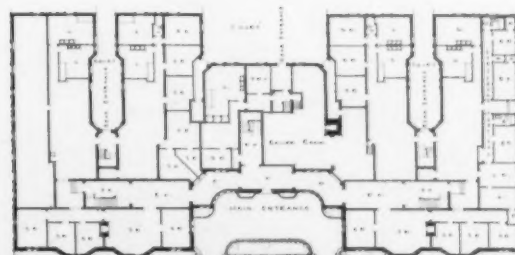
APARTMENT
AT
CHICAGO, ILL.

SCHMIDT, GARDEN
& MARTIN
ARCHITECTS

UOP M

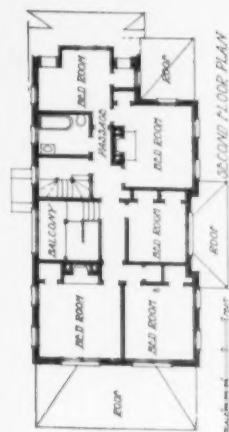
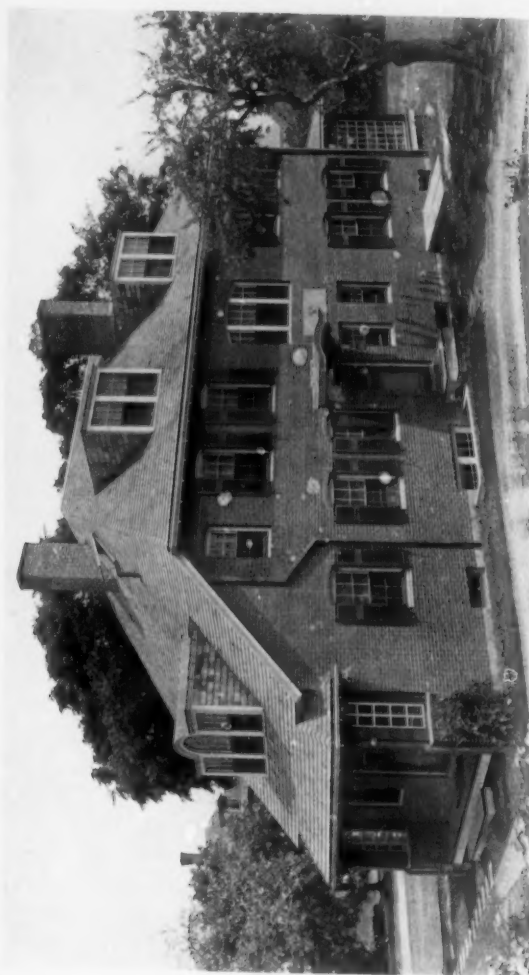


SECOND FLOOR PLAN

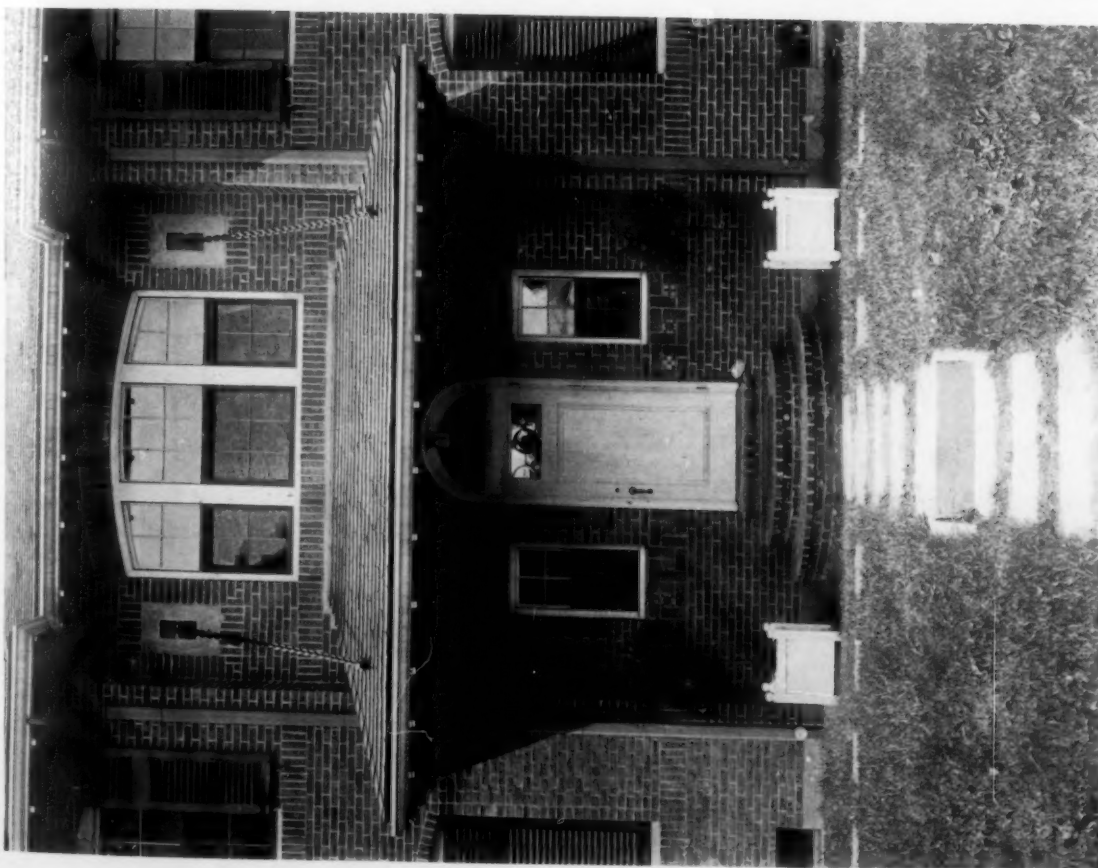


FIRST FLOOR PLAN

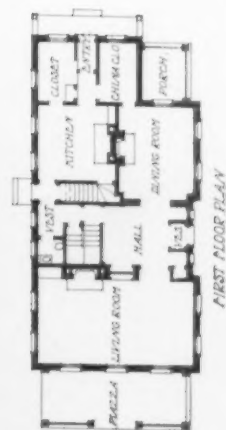
UPLM



HOUSE AT ROWLEY, MASS.
FRANK CHOUTEAU BROWN
ARCHITECT



PLAN



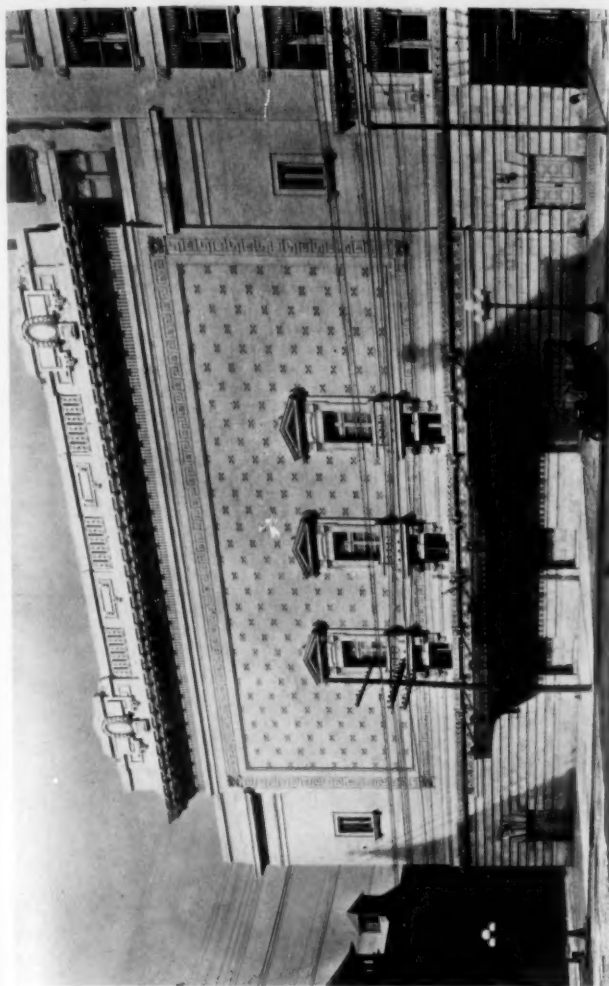


DETAIL OF REAR ENTRANCE

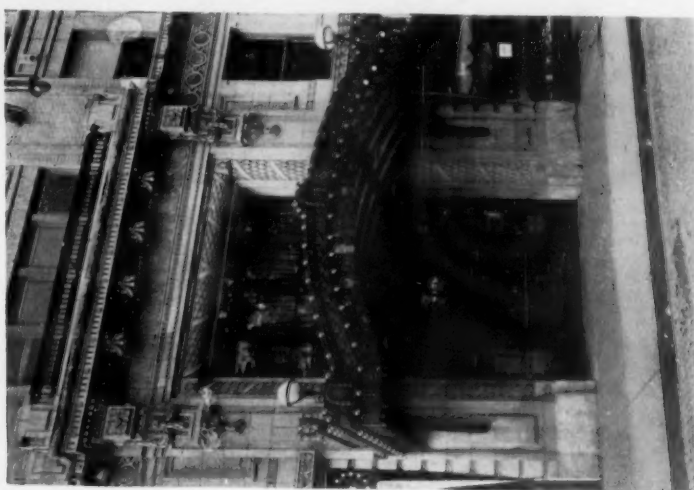


DETAIL OF SIDE ELEVATION

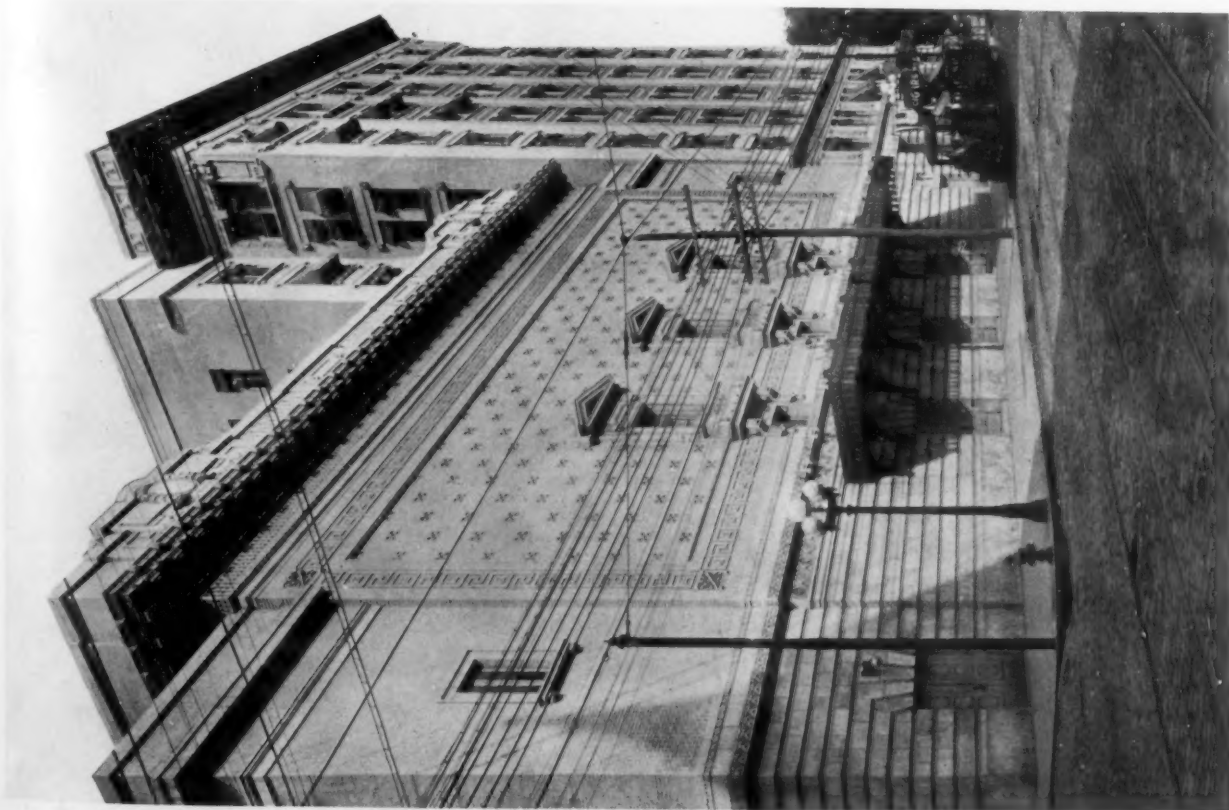
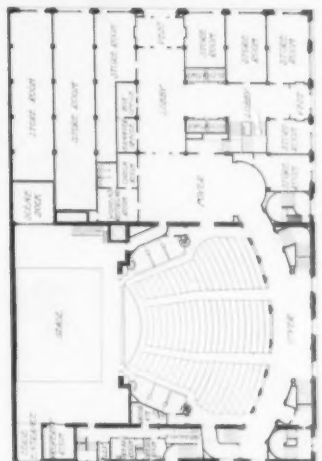
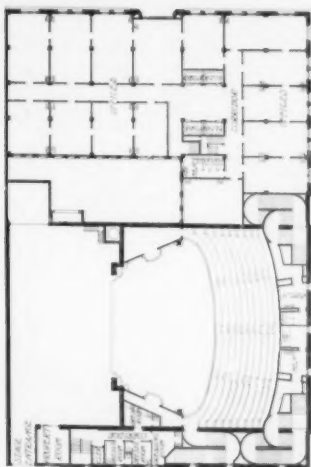
HOUSE AT ROWLEY, MASSACHUSETTS
FRANK CHOUTEAU BROWN, ARCHITECT



THEATRE FACADE



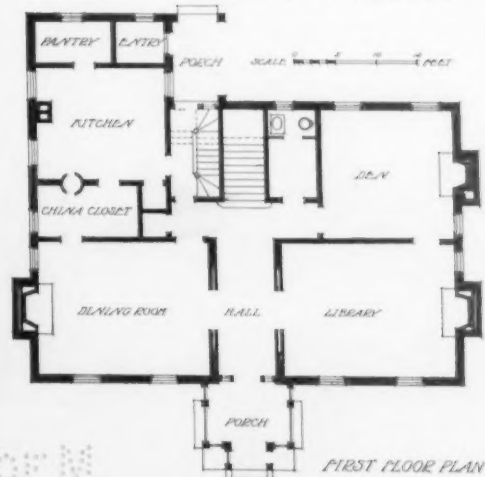
THEATRE AND BUILDING ENTRANCE



HARTMAN THEATRE AND OFFICE BUILDING, COLUMBUS, OHIO
RICHARDS, MCCARTY & BULFORD, ARCHITECTS



HOUSE AT CHESTNUT HILL, MASS.
PAGE & FROTHINGHAM, ARCHITECTS



1

UOLM



A Terra Cotta Grill Room.

THE CAFÉ OF THE NEW McALPIN HOTEL, NEW YORK CITY.

BY F. M. ANDREWS & CO., ARCHITECTS.

"WHERE in the world did you get that red?" asks one as he takes the small broken fragment of terra cotta held out to him. It was somewhat the tone of Egyptian jasper or of a color known as Chinese orange. "Why, it's the red of Abbey's Holy Grail. It is just the tone of the costumes he occasionally uses as the central accent of his canvases. It is astonishing what they are doing with terra cotta to-day!"

The exclamation was the outcome of a description of the Terra Cotta Grill Room of the new Hotel McAlpin, an architectural and decorative triumph of which much will doubtless be heard, as it is undoubtedly the first time that this interesting material has been used in the New World in just this particular manner. That is, it is here employed as an interior decoration, as an element of beauty, enriched, yet well able to take care of itself. It is the same as the material of the structure. In no way is it a thin sliver of clay, cemented to the under side of a brick or concrete arch. It is not a tile decoration, nor is it simply a slab in form and thickness. The sections are masonry in their size and character. To this the jointing also testifies. From start to finish the bold spirit of the mason dominates everywhere. A spirit that is omnipresent, softening and humanizing at times where condition demands.

The architect, in this assumption of the responsibility of adding in this particular way decorative ornament to the structure, has so adroitly conceived a motif of a refining nature as to make interesting every foot of the surface

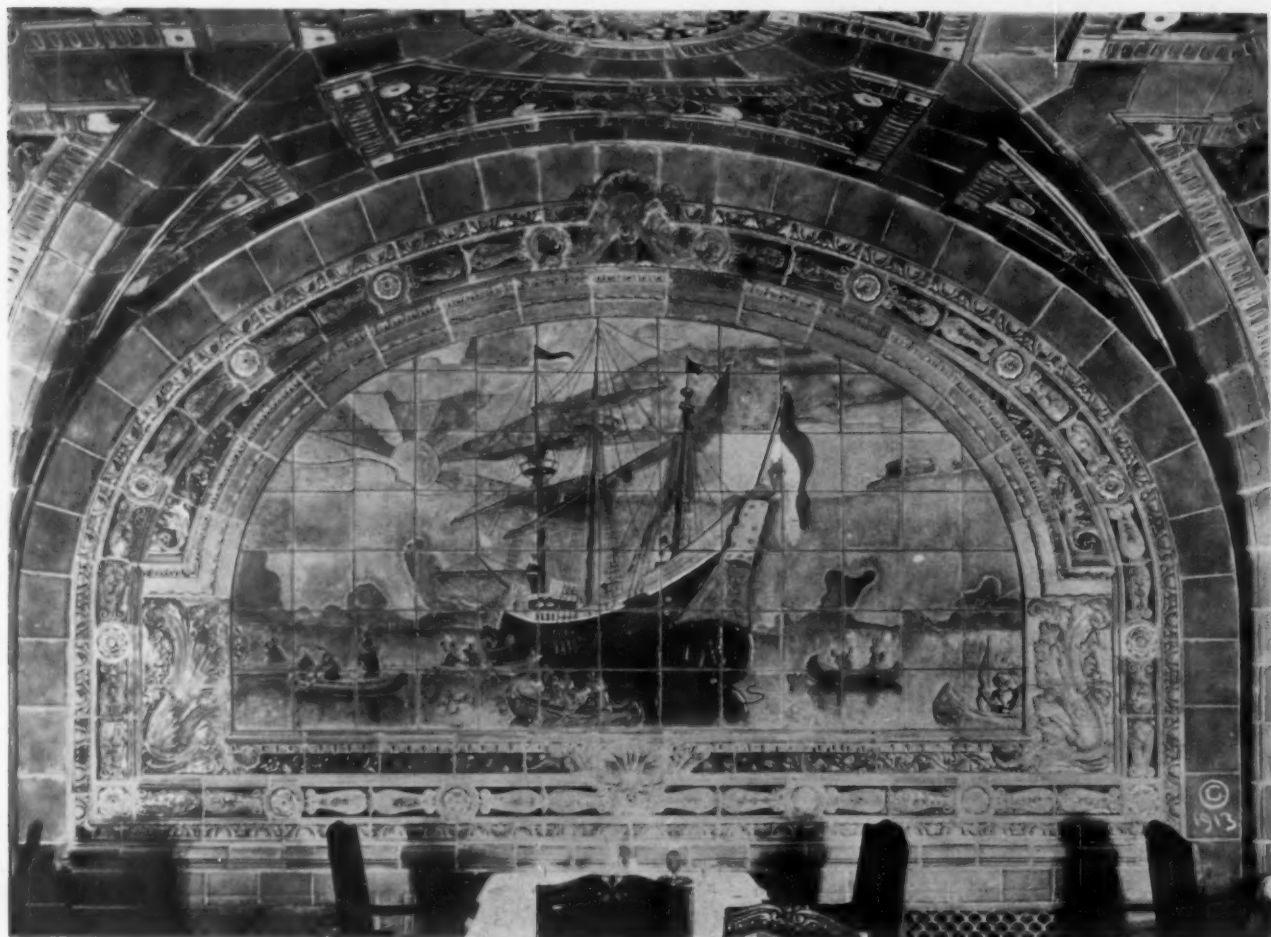
both of walling and vaulting. Even to the flooring, with its paneled pavement, has he assigned an important part of the scheme, so contriving it that it forms both in drawing and in color a substantial base for the composition. He has devised broad bands of countersunk ornament with rosettes and bosses at set intervals which panel the vault and the piers. Much of this is not only a tribute to the wondrously stimulating memories of Italy's sculpture wherein, cameo-like, ground and ornament vary but little in relief, but it speaks well for the color sense of the architect, who has so devised the floriated section of the ornament as to bring into the picture certain qualities somewhat unusual and very stimulating. Yet care has been exercised to treat the chamber as an entirety. The scheme throughout is big and wholesome in idea. It is broadly handled, very much after the fashion of the great Roman basilica, exhibiting everywhere a sensitive regard for color, form, growth of ornament, adjustment of accent and relation between pier and walling. The vaulting springs from square piers, which carry the building, forming two ranks through the chamber. It springs also from the walling. As a matter of fact, it is somewhat low in inches, but so skilfully is the paneling arranged that the apparent height is greatly increased. There is not any acknowledgment of the spring line, nor demarcation of the actual commencement of the vaulting. It appears to begin from the floor, — an ingeniously contrived illusion! The perpendicular paneling of the piers, the moulding of the corners, the arrangement of the jointing, the elongating

of the principal panels which, cartouche like, occupy the most conspicuous part of the scheme, all tend to accent and stimulate the upward movement. This is all the more clever because, as a matter of fact, the chamber is long, and would be dreary but for skilfully devised lighting, wherein countersunk panels alternatingly circular and oblong appear in the central arch panel. The side lights are useful and so are the little personal table lights. Thanks to the shining linen, their light is thrown upward, a valuable illumination, which does serviceable work in a quiet way.

The shaping of the paneling is unquestionably the cleverest part of the composition. For a moment I am

vaulting panels, as the ground of the conventional border to the narrative stories of the walling. It is the red of the scarlet geranium, of the japonica and the nasturtium, that trailing, pungent plant which madcap-like turns up everywhere in the garden, climbing the walls, setting everything on fire with its brilliancy. It is the red of the coral of the South Pacific Islands, of the lacquer of the Orient. It is the red of the sealing wax, that great vitalizer of important legal documents, and for many years the distinguishing color note of "Tommy Atkins"!

The general tone of the chamber is golden brown; perhaps it had better be termed "burned ivory." In certain lights it resembles somewhat the dull brown of "camel's

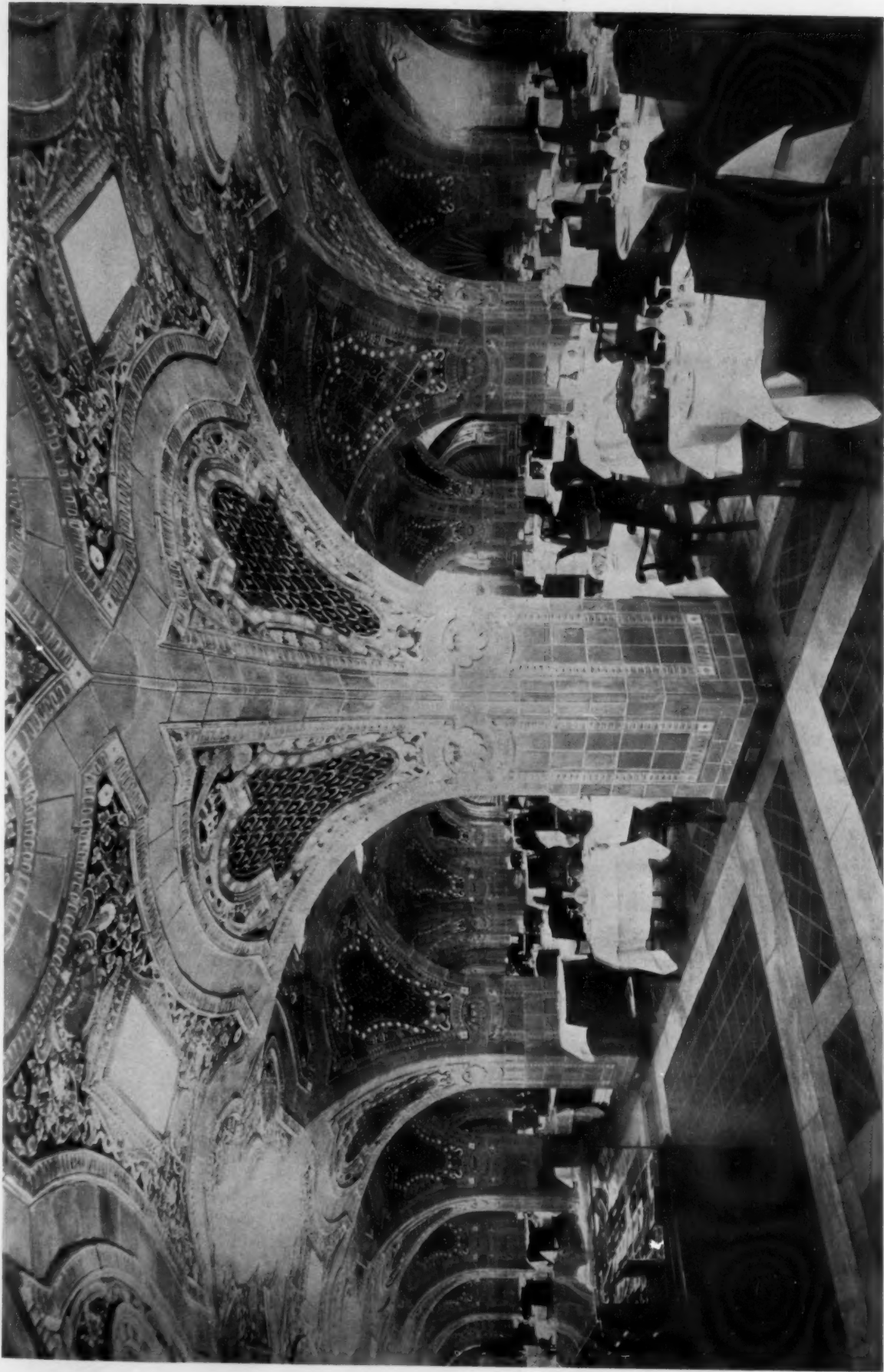


TERRA COTTA PANEL — GRILL ROOM, MCALPIN HOTEL, NEW YORK CITY.

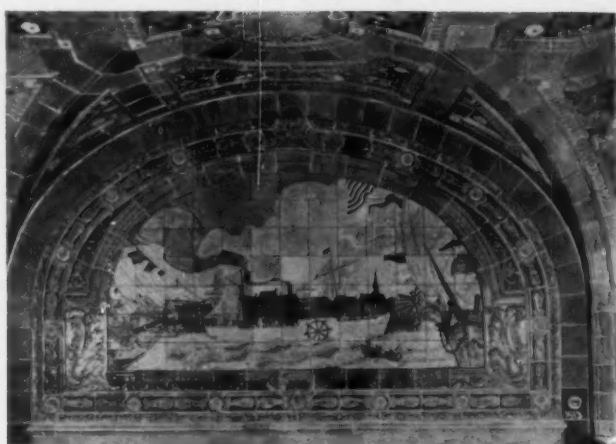
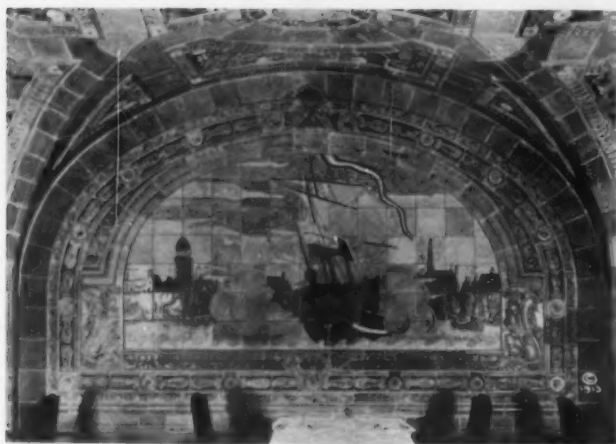
Fred. Dana Marsh, Designer.

tempted to say it is the most important decorative section of the whole building. Of course the plain surfaces do much by accenting the bands and the ornament, giving an agreeable contrast, a play of light and of shade, and again introducing that subtle quality of scale. Although pre-eminently serious in idea, the ornament is full of energetic action at times. There is a movement in the leaves, stalks, tendrils, and flowers that is fascinating. They are tied here and there, caught back and restrained in their proper places. These little whimsicalities give to the sturdiness of the design an agreeable relaxation and chance for color. And here it is that the glorious red is to be found. It appears as the background to the ornament of all the main

hair," it is so sedate and serious. At times it is transparent, changing every few inches. It is an excellent tone to live with, one of which we rarely tire. It brings out vividly the whites and the apple greens and emerald of the rosettes which appear at the mitred intersections, cornering the panels, and of the shell-like ornaments which appear elsewhere. It gives new life to the open flowers in the main ornament. It is soft and soothing, adding mysteriously to the values of the distance, making possible the introduction of strong contrasts. See how welcome the black marble wainscoting and black iron gates and the rich red of the Welsh quarry pavement become in the scene.



TERRA COTTA GRILL ROOM — McALPIN HOTEL, NEW YORK CITY
F. M. ANDREWS & CO., ARCHITECTS



TERRA COTTA PANELS—GRILL ROOM, McALPIN HOTEL, NEW YORK CITY.
Fred. Dana Marsh, Designer.

The narrative stories of the tympanum or lunette panels which appear at certain academic centers of the walling, one to each bay, invite individual notice. The panels were designed by Fred. Dana Marsh, and the close reproduction of water color tone values in faience is quite remarkable. In all, there are six stories of the maritime history of New York. There is the great story of the discovery of the Hudson River, where Hudson's *Half Moon* appears in the lower bay, the placid waters alive with canoes of native Indians. The quaint outline of the boat with its curious rigging is graphically illustrated by low coloring, by dark bottle greens and silver grays, transparent and occasionally iridescent. There is the British frigate firing upon New Amsterdam, and here the red of the ensign waves a momentary triumph! There is the pathetic tragedy of a hanging in the Old Fort. The river scene changes, and the majestic *Mauretania* is seen, dwarfing even the sky scrapers and blanketing the lower portion of the city; its hull and reflection a quaint symphony in greens shimmering upon the surface of the river; its upper cabins white and gray; the sky a transparent ochre; the funnels the wonderful red. Then follows a night scene of the *Commonwealth* leaving its dock, the searchlight vividly contrasting with the hazy outline of the city. The stately silhouette gives welcome scale to the picture.

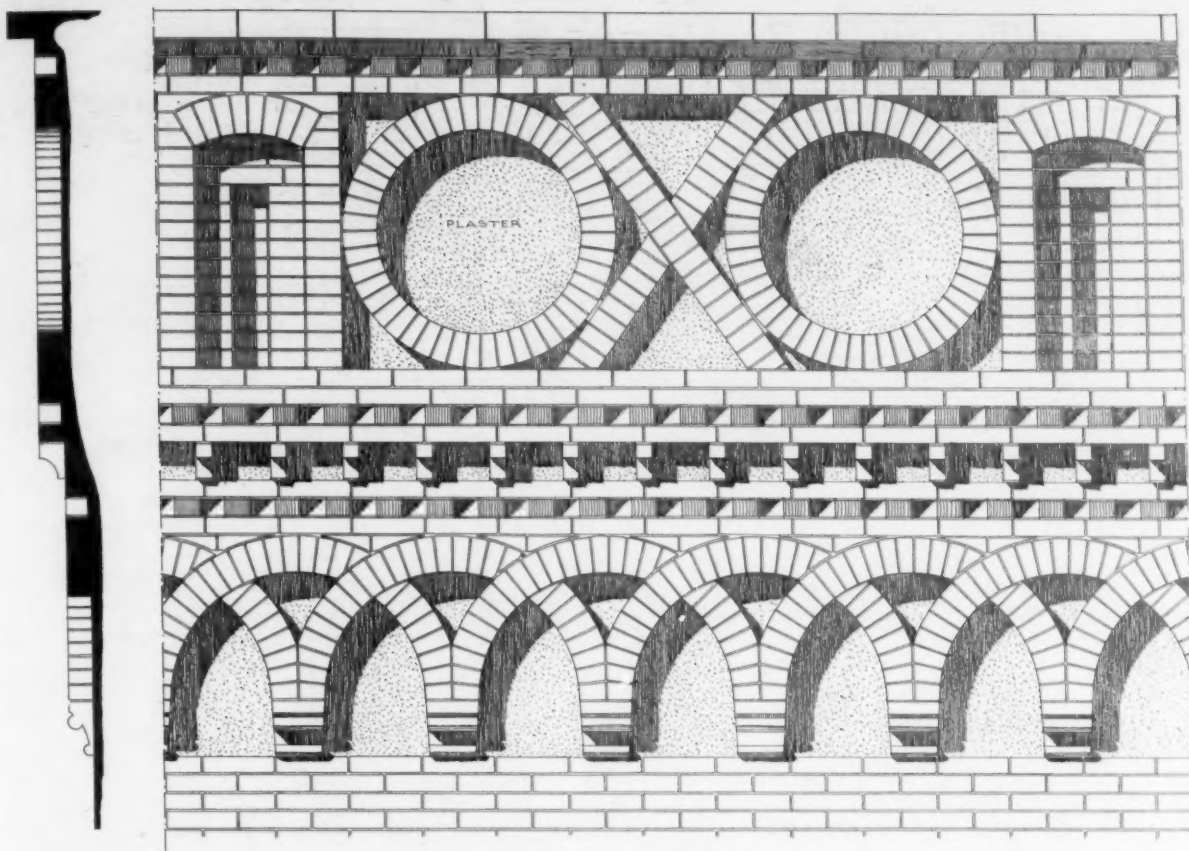
There is the occasion when Fulton's *Clermont* made her first voyage up the river.

There is unusual individuality in the panels; an unaffected bubbling over of color in places; a certain modulating of surface, conventional, but natural at the same time. The full water color value is retained with the added value of a texture, neither lustrous nor dull, that has a warmth and light possible only in faience.

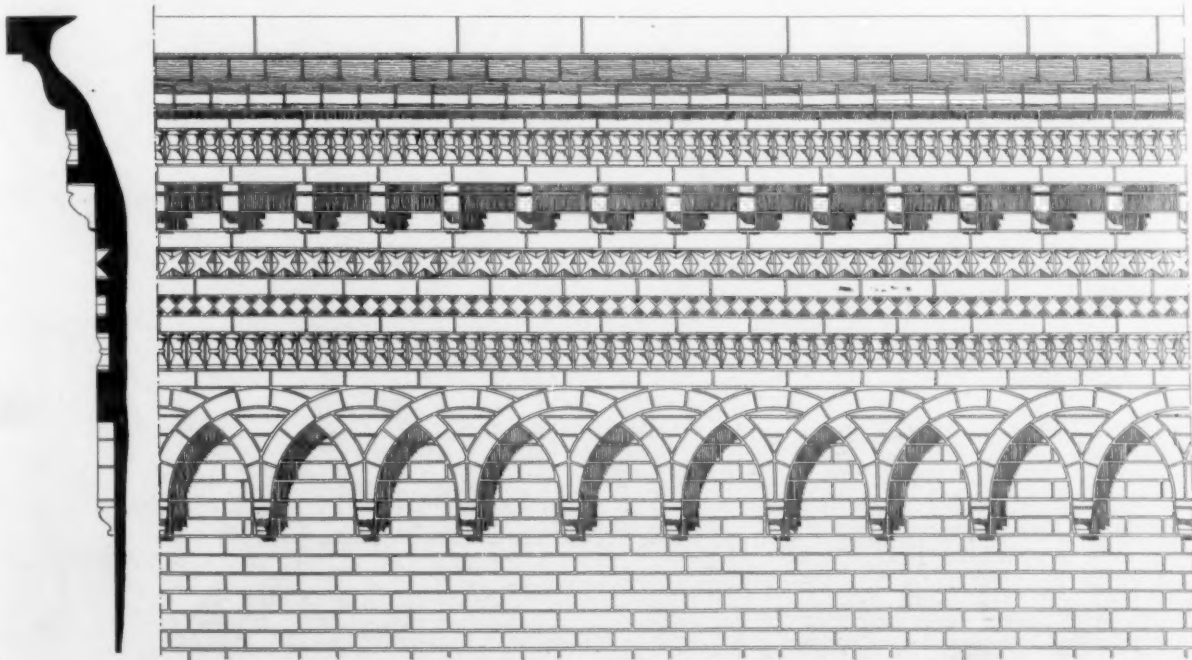
The craftsman of the sleepy Orient, for years familiar with many mysteries, once in a while produced small vases, purchasable at great prices. They are classed among the "Lost Arts," and generally of paste or porcelain body.

But for the stimulating enthusiasm of the architect, and his persistency with an unusual form of treatment, both as regards structure and color, these metal-bearing clays might still be sleeping in the deep bosom of Mother Earth, in the clay beds of a neighboring state. Innate love of color, applied to decorative motifs, after the fashion of the Italian sculptors Donatello and the Della Robbias, led to experimenting, and finally produced a building material of unprecedented amenability to the most critical taste for texture and color, adapted to the inclemency of weather, and without limitation as to size, shape, or proportion, yet sensitive to the most delicate modeling.



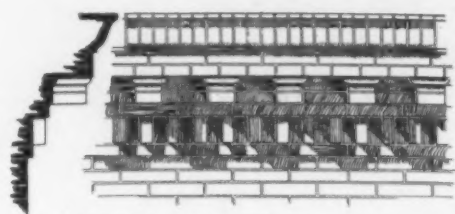


CORNICE AT SIDE OF SAN FERMO MAGGIORE, VERONA.

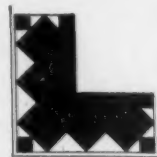
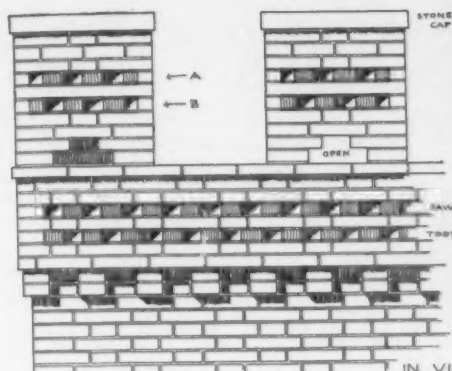


CORNICE • SAN FRANCESCO • BRESCIA •

MEASURED DRAWINGS—ITALIAN SERIES
WILL S. ALDRICH, DEL.



IN VIA CAVOVR • SIENA •

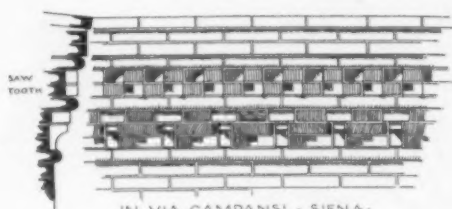


PLAN AT "A"

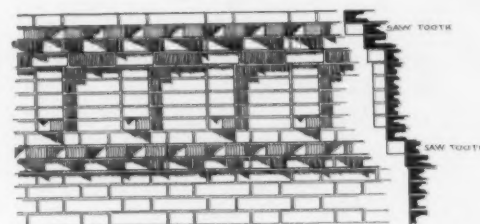


PLAN AT "B"

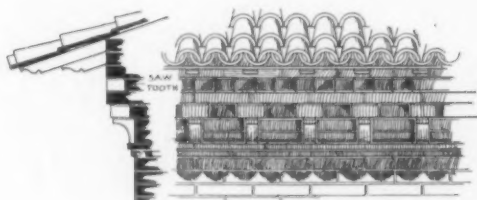
IN VIA CAMPANSI • SIENA



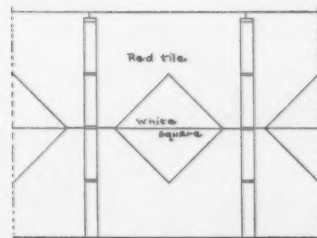
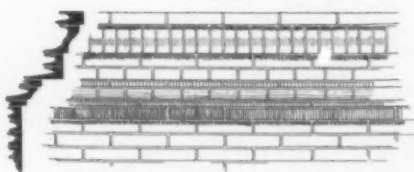
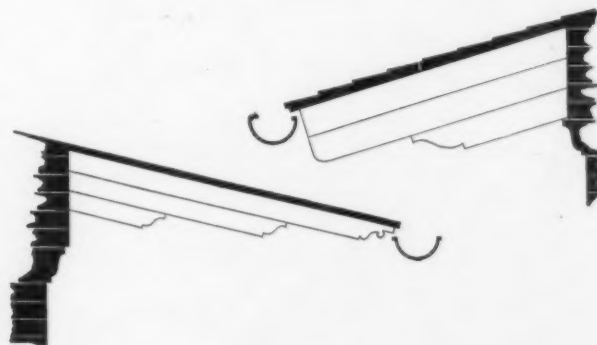
IN VIA CAMPANSI • SIENA •



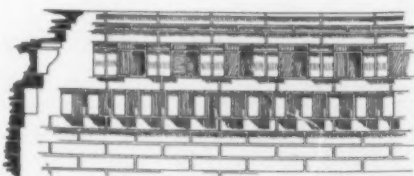
WALL • CORNICE • SIENA •



• SIENA •



SOFFIT OF CORNICE

TWO SIMPLE CORNICES
FROM S. SPIRITO • SIENA •

CORNICES FROM SIENA

MEASURED DRAWINGS—ITALIAN SERIES

WILL S. ALDRICH, DEL.

St. Patrick's Church, Philadelphia.

LA FARGE & MORRIS, ARCHITECTS.

BY ALFRED HOYT GRANGER.

TO one looking for the interesting in architecture, few cities offer more delightful surprises than Philadelphia, and one of the most delightful glimpses to be found in that city is the view of the new church of St. Patrick from the corner of 19th street and Rittenhouse Square.

I first discovered it one spring morning, months before the church was completed; but even then the play of shadow behind the tall columns and the carefully studied slope of the gable against the blue of the sky at once brought to my mind pictures of Italy, especially of Verona, where the Lombard style is at its best.

The church stands on the corner of 20th and Rittenhouse streets, but owing to the fact that the latter street does not cross 20th street in a straight line, but drops a few feet to the south, the portico of the church is almost on axis with Rittenhouse street east of 20th street.

The materials of the building are a warm faun-colored brick, quite rough in texture and almost the color of Travertine-Stone, terra cotta to match the brick, with columns, pilasters, and steps of warm gray granite. The spandrels of the three great arches on the south side are inlaid in color, rich blues and greens, which at first sight seem almost too startling, but have already toned into the brick, and now the effect is quite charming. All of the ornamental details are of terra cotta, and are carefully carried out in the best spirit of the North Italian work, but are in no sense copies of any ancient models. The capitals of the great columns, the ornamentation of the frieze, and the corbels supporting the crown moulding of the main gable are particularly worthy of study. From the exterior, the great rose window is not so satisfactory and seems almost lost behind the parapet of the portico, and too small in scale. When one sees it from the interior, however, the architects are justified in its size, for there it is perfect in scale and beautifully placed. The gilt cross at the apex of the gable is, however, too small from every point of view, and looks as if it were made of wood and temporarily placed for the purpose of study in scale.

The building is rectangular in plan and consists of two stories. The interior walls in both crypt and main church above are of the same brick as the exterior. The crypt is exceedingly interesting with its faun-colored walls and ceiling of the same tone. The columns supporting the vaults are of a delicately veined white marble. The main church, raised about twelve steps above the sidewalk, is a basilica in plan, covered with three great domes. Everywhere the construction is frankly and honestly shown, as it always should be in a building dedicated to the worship of God. The predominant color is the same as the exterior, but marbles have been carefully and beautifully introduced in the pilasters, supporting the ribs of the ceiling vaults, in the apsidal-shaped chancel and around the doorways. As the church is dedicated to St. Patrick, much of the ornamentation is Celtic in character, and the architraves of the three main doors and the sill courses of the great windows are beautifully modeled. The marble walls of the chancel and the panels in the

pilasters are of a delicate green Cippolino marble which harmonizes perfectly with the faun-colored walls.

The design of the high altar is particularly beautiful, the marble being white Vermont with serpentine panels. The steps to this altar have white marble treads with serpentine risers, and the effect of the chancel from the nave is one of great simplicity and almost austere purity, which is unusual in Roman Catholic churches in America. The architects have realized most fully the value of the floor as an architectural feature, a thing too often neglected. In this church the floors of nave and of chancel are of tile of a rich reddish brown color lightened up with occasional spots of greenish tone. In the center of the chancel floor directly in front of the high altar is a carpet of green tile very soft in tone and symbolical in design. One must not overlook too the risers of the chancel steps of green tile stamped with a St. Andrew's cross. One unusual feature of the chancel wall is the frieze above the high altar. At first sight this frieze, of a deep golden Siena marble, looks as if it were carved, but on closer inspection one finds that these festoons are but portions in the veining of the marble, a legitimate use of material which adds greatly to the richness and lightness of the wall treatment and carries the eye to the organ and choir galleries high up on either side of the chancel. The balconies of these galleries, which project slightly from the chancel walls, are of white terra cotta and the detail of the balustrades and supporting corbels is almost Venetian in delicacy of treatment; and this same detail of balustrade is carried across the top of the reredos, which thus forms a gallery above the altar for processions. So much for the chancel, which is, as it should be, the focal point of interest in the church, and which the photographs show far more plainly than can any written words.

Let us turn again to the nave, which contains so much of interest. The pews are of dark oak, dignified and architectural, and, what is equally important, comfortable to sit in and placed sufficiently far apart to allow one to kneel reverently without being troubled by the feet of the one in front of him. One should not leave the church without examining very carefully the holy water fonts at the eastern doors, which were designed and given by Mr. Henry Thouron. These fonts are thoroughly Celtic in design and beautifully executed. One must also notice the iron gates to the baptistry and the iron doors on the north side of the church. These are hand wrought and particularly well executed.

The mosaic panels let into the walls of the church below the great windows and illustrating the Stations of the Cross are the only jarring features in an otherwise wholly harmonious interior. They are too harsh in color and project slightly from the wall, which is very unfortunate as now they look as if they had been tacked onto the wall surface. Had they been slightly recessed into the walls, just enough to have a shadow cast along the upper edge, the effect would have been much better.

Thus far I have spoken only of the architectural side of the church, its design, but in a building of this character

one must notice the construction. It is the keynote of the design. Nothing is false, nothing hidden. Here is a temple of God built to stand the test of time and so honest that all men can feel the honesty.

One of the most interesting portions of the building is up in the attic space between the domes and the roof. Here one can see and understand the construction of the vault and in this case the roof itself is also of the same construction. Here is a structure that is essentially modern but preserves all the beauty of tradition, that great tradi-

tion which the Roman Church, more than any other known organism, has cherished and handed down from age to age. In this country of ours, until quite recently, it has seemed as if Rome were neglecting her architectural traditions, but St. Patrick's Church is a sure proof that she never forgets but only bides her time, and we can surely, with this building as a precedent, look forward to the time when the churches of Rome in this country, as in Europe, shall be the delight and inspiration of all men.

EDITORIAL COMMENT AND NOTES FOR THE MONTH



ARCHITECTS' FEES—III.

HAVING spoken last month about the advantages of the suggested methods of computing architectural fees, it here becomes necessary to discuss the defects of same and to conclude by asking our readers for their experience and views upon this subject.

If a statesman were to receive as a yearly salary an amount equal to four times the salary of his private secretary, would it not be difficult to persuade the public, no matter how stable a reputation for integrity the statesman might have, that he was impartial to the idea of overpaying his secretary. Yet, is there not a marked similarity between the financial arrangement of the statesman and his secretary and that of the architect who receives from his client four times the amount of the salaries of the draftsmen employed on his work as the gross profits for his professional services? Isn't the architect in the position where the more he pays his draftsmen the larger becomes his gross profit on the work? The architect, then, without increasing his overhead expenses, can easily increase his profits by overpaying his draftsmen. The situation is one in which the client, having no chance whatever of controlling the cost of architectural services, must have implicit faith in his architect's discretion, and if at any time during the progress of the work he should feel that the bills for drafting were unwarrantably large, he would immediately place his architect in the embarrassing position of having his business efficiency doubted. It seems, then, that this method of charging four times the drafting services might be most unsatisfactory for the client financially, and disagreeably embarrassing for the architect in the case of a dispute.

Let us then consider the "twice the draftsmen's salaries plus a professional fee" basis of charging. If an architect is receiving a definite amount for his services and is charging his client twice the drafting salaries of the men employed on his work, to cover drafting and overhead expenses, doesn't he stand to gain by overpaying his men? The answer to this is of course "Yes," but the amount he gains is so small that "the game is hardly worth the candle." If the work warranted the services of a thirty dollar a week man, the overhead expenses would be nor-

mally in the neighborhood of the same amount, and by putting a forty dollar a week man on the work, the architect would be gaining only ten dollars a week. Besides, it is to be supposed that any reputable architect would not conscientiously run his client into excessive drafting expenses. He has a bookkeeping system in his office, and in case of a dispute he would be the first to suggest that the client's ledger be opened to his client's inspection. Any startling financial discrepancies would immediately show themselves. And certainly the majority of architects value their reputation to such an extent that, if it ever came to a point where the books were examined, it would be found that the greatest care had been taken to carry on the client's work in the most efficient and economical manner.

There are, however, those in the general public who feel that an architect is a peculiar type of person who has absolutely no idea of business principles. Such men really appreciate good business methods more than they do good architecture, and it is the architect's problem to give them both. Many business men feel that they must see in black and white where every dollar of their expenditure goes. They are satisfied to pay a man a good profit for his work, but they must know that their work is carried on in a thoroughly business-like manner. To pay an architect in addition to his just net profit double his draftsmen's salaries, taking the architect's word for the fact that overhead charges and drafting expenses run equal, would not be likely to appeal to a cut and dried business man. He will say, "If my architect is running a portion of his office for me and me only, it is only right that I should know where every cent goes." Theoretically his statement sounds logical, but is such a scheme practical, when rent, stenographic services, and research work enter into the expenses of a job? It is not. Some overhead expenses must be distributed among many jobs, a proportion of them prorated to each piece of work. It would not be possible to charge a client for a definite number of square feet of floor space for his rent. To the architect the amount of work in the office governs the overhead rent, and he endeavors to keep the size of his office in proportion to the size of his business.

But it is possible to go even farther with the "twice the

draftsmen's salaries plus the professional fee" basis than we have yet gone, and a logical solution of the whole problem, a practical alternative for the six per cent commission basis, one satisfactory to both the client and the architect, is briefly sketched as follows.

Again let us take the example of a one hundred thousand dollar enterprise. On the six per cent commission basis, three thousand dollars would represent fifty per cent of the gross commission, a sum just for the architect to take as his professional fee. The other fifty per cent would go to drafting and overhead expenses. Let the architect say to his client it is reasonable to suppose that the drafting and overhead expenses will be approximately equal. That would mean that practically fifteen hundred dollars would go to drafting salaries and fifteen hundred dollars to sundry overhead charges. The client, therefore, shall pay the architect three thousand dollars for his professional fee, fifteen hundred dollars for his overhead expenses, and also the cost of the draftsmen's salaries employed by the architect on his work, and the architect shall render to the client monthly statements showing the cost of drafting expenses incurred during the previous month on the job.

This arrangement would have equal advantage for client and architect. The architect would receive his professional fee, the client would pay for the exact cost of producing the work. The system would be simple to run, as weekly time sheets would show the amount of time the men had worked for the client, and the bookkeeper would keep the overhead accounts. The professional fee could be paid in instalments as the work progressed, and the architect's monthly statement to the client of the cost of the work could be treated as a bill and paid like any monthly account.

Such a method of charging for architectural compensation as is above outlined is merely a suggestion founded on study of the problem. If the per cent commission basis has been found unsatisfactory, it is time for it to be improved. That the systems suggested in these editorials are theoretical and not practical is the criticism that many may offer. However, those who have experimented with them claim to have used them successfully and it seems hardly unfair to answer those skeptical persons who criticize them as theoretical with the question, "Is the 'percentage of the cost of the work complete' system of basing charges the last word?"

THE WHITNEY WARREN EXHIBITION IN THE AVERY LIBRARY, COLUMBIA UNIVERSITY.

As a feature of the movement which has for its objective the establishment of a French Institute and Museum in New York, a lecture on French Architecture was given by Prof. A. D. F. Hamlin, Thursday evening, February 27, in the Avery Library.

At the same time there was initiated a fine exhibition of material related to French architecture selected by Mr. Whitney Warren from his abundant collections, and loaned by him to the Avery Library for two months or more.

The chief feature of this exhibition is a series of French architectural engravings of the seventeenth and eighteenth centuries. Four of these are large plates; two represent-

ing the Galerie des Glaces, and the grand stairway at Versailles, and two representing the decorative architecture of extensive fêtes at Versailles. The remaining forty-eight plates are smaller and represent various decorative motives. These are arranged so that similar subjects are brought together, and only one or two by the same master are exhibited. In this manner an extraordinary variety of stylistic effect is secured.

The seventeenth and eighteenth centuries in France were prodigiously fertile in these inventions, which were frequently engraved directly upon the copper with great skill.

In addition to these engravings Mr. Warren exhibits several drawings from his unique collections of designs for ships made in the same period, when ships, like everything else, were expected to carry as much magnificence as possible. His collection of ships was made to assist in the design for the Yacht Club Building in New York.

Mr. Warren has also placed upon easels a rather complete series of the brilliant sketches for the decorative sculpture of the Grand Central Station, by Sylvan Salieres, Second, Grand Prix de Rome, originally from Toulouse, and now in New York City.

TASTE IN ARCHITECTURE.

MR. H. HEATHCOTE STATHAM, in his book, entitled "A Short Critical History of Architecture," undertakes, with his comments on the merits and weaknesses of the architectural styles he describes, to put his readers in the way of knowing what influences and what treatment of design produce good and bad architectures; he endeavors, he says, to make his history of architecture a lesson in architecture. He treats architecture as a continuous development. "There is not a building in the world," he remarks, "on which the historian can put his finger and say: 'Here such a style of architecture began.'"

THE VALUE OF OMISSION.

MR. MARCH PHILLIPPS in his book tells us that what distinguishes Greek architecture from all other styles is that they are based on additions, while Greek art is based on subtraction, or, in other words, the resolute and determined elimination of what is not absolutely required for the attainment of the end sought. We feel that in many cases, like other able gifted writers, Mr. Phillipps pushes his theories to an extreme, but we are absolutely with him in thinking that among the qualities which go to make architecture there is hardly any one so important as reticence. Although many of our modern buildings are most blameable in this particular, redundancy of features and ornament are frequently to be met with in the past. To express one's meaning in few and simple words is often to make it forcible, and in design the same holds good. A building's function is not to show the universality of the designer's knowledge of architectural forms, but his judgment in using wisely, logically, and well what is really necessary. — *The Builder*.

THE frontispiece for this number continues the series of Greek Churches started in January. We spoke about the general size of these buildings last month. It remains to further discuss the plan and constructive features.

The typical arrangement retained nothing of the old basilican plan; it was in the form of a cross with equal arms, inscribed in a square, and crowned with five domes. The subsidiary domes were not placed over the arms of the cross, as in the churches of the sixth century by which St. Mark's was inspired, however, but over the spaces left between the arms and the corners of the square. The plan seems indeed to have been rather the logical outcome of buttressing the central dome by four barrel vaults than an adaptation primarily symbolic. The form of the cross still appears, of course, in the upper part of the walls and in the roofs covering the barrel vaults. The whole mass assumes a pyramidal form, frequently of the most pleasing proportions and silhouette. From the tenth century this form of church, for which we find only remote prototypes in the period of Justinian, was used almost exclusively.

The dominating principle of its development during the subsequent centuries was a striving for lightness and elegance. The drum on which the exterior dome was invariably raised, itself an innovation beside the low swelling of St. Sophia, became higher as time went on and was made polygonal instead of circular, so that the multiplied lines of the angles increased its vertical movement. This was further accentuated by the height and narrowness of the windows and by the employment of slender colonnettes at the angles, with window enframements in several orders. The external domes themselves were multiplied, both over the marthex and at the corners of the plan; indeed in the thirteenth and fourteenth centuries the builders seem often to have sought how many they could use.

Under the Latin emperors whom the Crusades raised to the throne in the thirteenth century, and under the decrepit Paleologians who succeeded them, Constantinople itself almost ceased to produce important works of art. In the new nations which were springing up on the ruins of the empire, however, and in certain provinces which still remained tributary, a surprising activity continued. Byzantine art, in a supreme final effort, seemed bent on putting forth some of its fairest flowers before the coming of Islam with its new and beautiful hybrids. In Greece, the newly founded city of Mistra, capital of the Frankish vassals of the Peloponnesus, and the despotate of Arta on the Ionian Sea, preserve a series of churches in which this development is seen at its best. The characteristic tendencies of the earlier centuries are accentuated, with a result even more lively and picturesque, a gayer polychromy, at once luminous and mellow.

Through all these centuries the materials used were much the same, common brick alternating with ashlar, and colored faience for occasional enlivenment. At the simplest a single or double course of brick alternates with one of stone, perhaps with single bricks placed vertically between the blocks of stone, or small panels of brick laid horizontally. The beds of mortar, which are very thick, are often slightly raked out, giving an outline of shadow. The archivolt is constructed of brick with their long faces showing, and rich label-mouldings, string-courses, and cornices are made of common brick set with a corner

flush with the face of the wall. Common brick are also employed to fill the spandrels, sometimes in simple patterns, sometimes with the introduction of the cross or some other symbol; and at Merbaka a very effective frieze is made of a fret of the same material. Another series of effects is gained by patterns of brick embedded flush with the mortar, which in this case becomes a field on which the pattern seems to be traced. One of the best examples of this method is the church of Hagia Theodora at Arta, where an entire wall is covered with a herringbone diaper pattern floating in the mortar, to the greater attainment of decorative effect, it must be confessed, than of an appearance of stability. The most original device of the Byzantine masons was clipping the edges of common brick so embedded, in order to obtain, by the simplest means, the richest variety of free designs. The edge was simply splayed back in places by strokes of the trowel, so that when the mortar was brought flush with its face it might show any shape desired. Brick thus cut were used in friezes, especially of a guilloche design very easily made, occasionally in inscriptions, and often in small panels which are introduced between the stones of the horizontal courses. The best example of this treatment, showing both a frieze and panels, is the east end of the smaller church at the monastery of St. Luke in Phocis. The variety of designs it makes possible is well indicated by the figure, which shows a selection of the panels. A final resource of the builders was polychrome faience, at first modestly introduced, as in the scattered plaques at Merbaka, later, especially at Arta, lavishly mingled with the brick in belts and diaper patterns. No single group of colors predominates, but red, yellow, green, blue, and white are all used, harmonized by the surrounding tone of the brick. In the richer examples carved stone is not lacking, in the string-courses and in the parapets which fill the lower part of many windows. As time goes on, however, carving becomes more and more confined to the capitals alone, and the rich play of materials is alone relied on for decorative effect. Seldom indeed has such reliance been more successful. These unknown builders of the East, with no other elements than those of the most commonplace structure, have by ingenuity and fantasy produced an architecture of the rarest charm.

A MISTAKE was made on page IX of the January issue in crediting the authorship of the building at 14-18 West 46th street, New York City. This should have been given as Hazzard, Erskine & Blagden, architects; the builders as Thomas J. Steen & Co.

Announcement is made that the architectural practice of the late John S. Duckworth will be continued under the supervision of his son, John S. Duckworth, Jr., at 405 Coal Exchange Building, Scranton, Pa.

Mr. D. W. F. Nichols and Mr. J. Pender West have formed a partnership under the name of Nichols and Pender West. The address will be 911 Somerset Building, Winnipeg.

Mr. J. R. Gieske announces that he has opened an office at 503 Vinson-Thompson Building, Huntington, W. Va.

THE BRICKBUILDER

AN ARCHITECTURAL MONTHLY

SUPPLEMENT TO
NUMBER FOR

MARCH 1913

VOLUME XXII
NUMBER 3

ARCHITECTURAL TERRA COTTA SPECIAL NUMBER

GARAGE AUTOMOBILE SALES AND SERVICE BUILDING

CONTENTS

MAGGIORE HOSPITAL, MILAN, ITALY—DETAIL OF FAÇADE	Frontispiece	Page
PROGRAM: COMPETITION FOR GARAGE, AUTOMOBILE SALES AND SERVICE BUILDING		3
REPORT: JURY OF AWARD		4
DESIGNS FOR GARAGE, AUTOMOBILE SALES AND SERVICE BUILDING (Submitted in Competition)		5-24
ARCHITECTURAL TERRA COTTA—ITS RATIONAL DEVELOPMENT	M. Stapley	25
AUTOMOBILE SALES AND SERVICE BUILDING AND PUBLIC GARAGE	J. L. Snow	27
GARAGE BUILDINGS RECENTLY BUILT Illustrations from Photographs and Plans.		29-38
FIRE PROTECTION OF A PUBLIC GARAGE	F. E. Cabot	39
TERRA COTTA CONSTRUCTION DETAIL PLATES		41-71
ADVERTISING ANNOUNCEMENTS OF TERRA COTTA MANUFACTURERS		72-80

NEW YORK

ARTHUR D. ROGERS
PRESIDENT AND TREASURER
ENTERED AT THE BOSTON, MASS., POST OFFICE AS SECOND-CLASS MAIL MATTER, MARCH 12, 1892. COPYRIGHT, 1913 BY ROGERS AND MANSON COMPANY

PUBLISHED MONTHLY BY
ROGERS AND MANSON COMPANY

RALPH REINHOLD
VICE PRESIDENT AND BUSINESS MANAGER

BOSTON

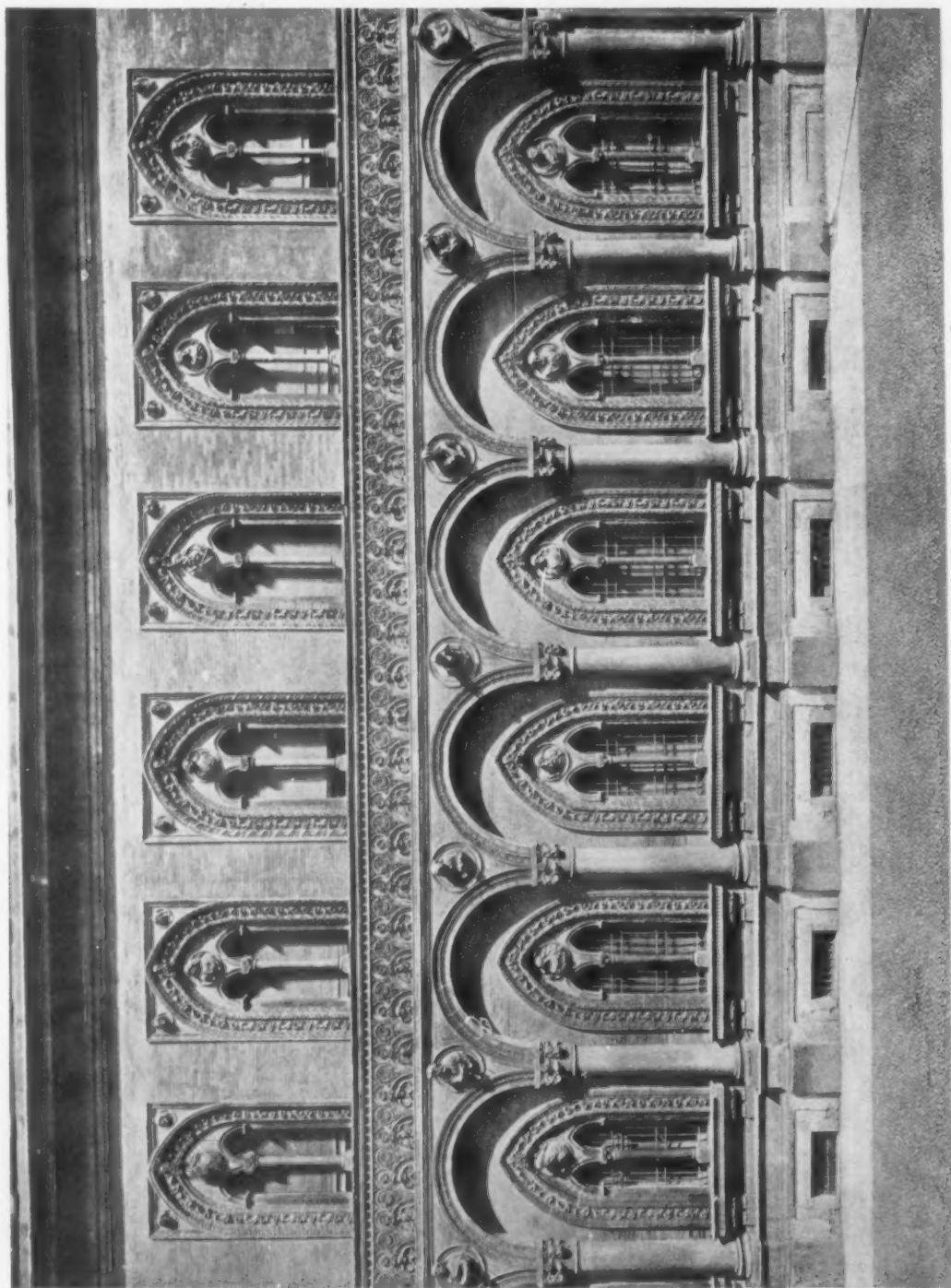
RUSSELL F. WHITEHEAD
SECRETARY AND MANAGING EDITOR

SUBSCRIPTION RATES

For the United States, its insular possessions and Cuba, \$5.00 per year
For Canada, \$5.50 per year For Foreign Countries in the Postal Union, \$6.00 per year

All copies mailed flat

Trade supplied by the American News Company and its branches



DETAIL OF FACADE, MAGGIORE HOSPITAL, MILAN, ITALY.

THE BRICKBUILDER

SUPPLEMENT
TO

MARCH, 1913.

VOLUME XXII.
NUMBER 3.

The Brickbuilder Competition

FOR A

Public Garage, Automobile Sales and Service Building

DESIGNED TO BE EXECUTED IN ARCHITECTURAL TERRA COTTA

FIRST PRIZE, \$500. SECOND PRIZE, \$250. THIRD PRIZE, \$150. FOURTH PRIZE, \$100.

HONORABLE MENTIONS.

PROGRAM

THE problem is a GARAGE, AUTOMOBILE SALES AND SERVICE BUILDING,—three stories high. The site is assumed to be on the corner of a city block in the automobile district. Lot size—40 feet on the Main Street by 100 feet on the Secondary Street — level land. The building is to occupy the entire lot.

The first floor is to be used as a salesroom with administrative equipment and for live storage. On this floor plan — which should provide an attractive frontal treatment — show the necessary utilitarian features such as stairs, elevators, turntable, fire walls, toilets, gasoline storage, etc.

The second floor should provide for chauffeurs' recreation room, toilets, etc., in addition to storage space.

The third floor is to provide for storage and for a repair shop. Special attention should be paid to the natural lighting of this floor.

The designer is asked to show on the plans any new or original devices which would add to the value of a building of this character.

The two street facades of the building are to be designed for Architectural Terra Cotta, the purpose of this Competition being to encourage a study of the material and its adaptability to a building of this character. At least a portion of the facades should be treated in color.

There is no limit set on the cost, but the design must be suitable for the character of the building and for the material in which it is to be executed. Provision may be made in the design for the placing of signs.

The following points will be considered in judging the designs:

A — The general excellence of the design, especially if it has originality with quality, and its adaptability to the prescribed material.

B — The excellence of the first-story plan.

DRAWING REQUIRED. (There is to be but one.)

On a sheet of unmounted white paper — very thin paper or cardboard is prohibited — measuring exactly 34 x 25 inches, with strong border lines drawn $1\frac{1}{4}$ inches from edges, giving a space inside the border lines of $31\frac{1}{2}$ x $22\frac{1}{2}$ inches, show:

The main street elevation, with section through wall, drawn at a scale of 4 feet to the inch.

A pen and ink perspective — without wash or color — drawn at a scale of 8 feet to the inch.

The three floor plans drawn at a scale of 16 feet to the inch.

A sufficient number of exterior details drawn at a scale of one-half inch to the foot to completely fill the remainder of the sheet.

The details should indicate in a general way the jointing of the terra cotta and the sizes of the blocks.

The color scheme is to be indicated either by a key or a series of notes printed on the sheet.

All drawings are to be in black ink without wash or color, except that the walls on the plans and in the sections may be blacked-in or cross-hatched.

Graphic scales are to be shown.

Each drawing is to be signed by a *nom de plume*, or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The designs will be judged by three or five well-known members of the architectural profession.

The Competition is open to every one.

The manufacturers of architectural terra cotta are patrons of this Competition.

Report of the Jury of Award.

YOUR jury, while appreciating the difficulties that confronted the participants in this competition can but feel that the results submitted this year are hardly up to the high standard set in competitions previously held. With very few exceptions the competitors failed entirely in the realization of the characteristics and nature of the material in which they were supposed to work and therefore the designs were more in the nature of adapting or translating into terra cotta, features that would be much better carried out in some other material.

This defect is further emphasized by the subject itself which seemed to call for a building festive in character and which furnished unusual opportunity for exploiting the possibilities of terra cotta as a building material.

With this defect went a second which was equally noticeable in all, *i. e.*, the failure to indicate in the exterior treatment the relative importance and uses of the different floors.

With hardly an exception the designs were at fault by not holding together or composing well when seen in perspective. The fact that the competitors seemed to have great difficulty in presenting their perspective drawing did not in any way affect the judgment of the design. The faults of each were emphasized by this manner of presentation. There were many good designs when considered merely as a façade on the Main Street which failed altogether with the "turning of the corner."

A word should be said about the drawings submitted. Your jury was familiar with the splendid sheets usually presented in *The Brickbuilder* competitions, where clever draughtsmanship sometimes disguised a rather commonplace design. There was some disappointment, therefore, when the drawings in this competition failed to come up to *The Brickbuilder* standard. The drawings throughout did not show any extraordinary quality of draughtsmanship and seemed to lack imagination altogether. There were only about a dozen that could be called good examples of draughtsmanship.

With architectural terra cotta permitting of much freedom of expression in the ornamental features of the design it is to be regretted that there was so much inconsistency in the detail. Very little ingenuity was shown in the development or modification of a style by reason of the material.

These several defects in the opinion of the jury detracted greatly from the success of the competition.

The criticisms made are not intended to indicate any carping spirit, but rather to be in the nature of suggestions as to lines that might well be followed in the future with great benefit both to those entering such competitions as well as to the results that would be obtained. In fairness to the present competitors, however, it may be said that the defects noticed are so generally characteristic of the current work in actual practice that the training and influence of such current work should possibly be held more responsible than the draughtsmen who took part in this contest.

It is to be hoped that in the future those entering these competitions will give greater consideration to these points, and in selecting their motifs for development the choice will fall on those only which will express the nature and characteristics of the material in which the building is to be constructed.

The First Prize Design received its place by the unanimous vote of the jury. The composition is charming in mass, the detail is executed in excellent taste and shows great refinement. While the design cannot be credited with great originality there is a feeling that the winner was in sympathy with the use of the prescribed material, getting into his work that flowing and plastic touch which is typical of the best terra cotta design. The author, however, neglected to indicate in his details the jointing of the terra cotta and the size of the blocks. The problem of a garage which should also be an automobile salesroom is well taken care of in plan where there is a simple and utilitarian spirit obtained in the grouping of the features called for in the program.

The Second Prize Design. The program called for judgment upon the general excellence of the design, especially if it had originality with quality and its adaptability to the prescribed material. This was recognized in making the award. All the requirements of plan have been lived up to. There was an honest intent to solve the entire problem. The very original manner in which the author has included provision for the placing of signs, in fact the design for the ornamental sign itself, gave this design its place. There was much diversity of opinion among the members of the jury as to the proper ranking of this design.

The Third Prize Design. A conventional type which by its detail might be constructed equally well in stone or other material than terra cotta. There is a sparing use of ornament and a rigidity which seems to be at odds with the spirit of the problem. The feeling of a steel frame with terra cotta used as an ornamental fireproofing shell is altogether missing. The continuation of the plate glass show windows between each bay on the secondary street seems unnecessary and hardly expresses the "storage" feature of the plan. The disregard for fireproof enclosures for elevators and stairs should also be noted.

The Fourth Prize Design. A good composition which undoubtedly is a design for execution in architectural terra cotta. The cornice is particularly interesting. The entrance to the sales department was evidently an afterthought and constructionally has the appearance of being rather weak. Here again the author has made a feature of the ornamental sign and has treated it as a part of the entire composition. In plan the over abundance of door openings and absolutely useless turntable, together with the omission of any over head light in the repair shop tends to mar an otherwise well studied treatment.

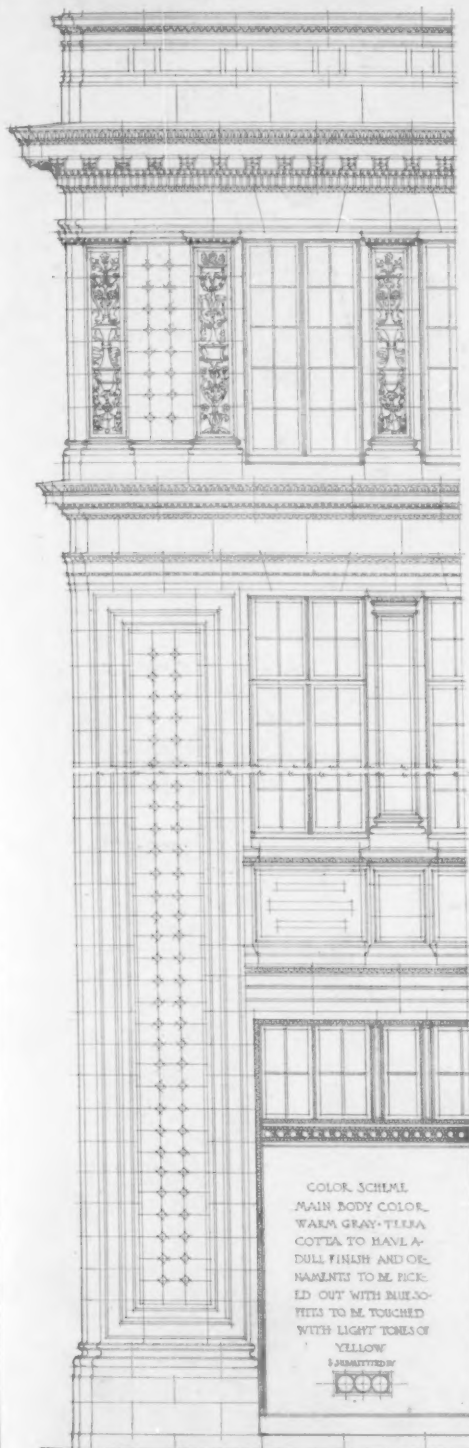
Mentions. The drawings which the jury felt entitled to a Mention were on such a dead level as to merit that it was found impossible to place these five in any sort of order.

Prof. JAMES KNOX TAYLOR,
BURT L. FENNER,
D. EVERETT WAID,

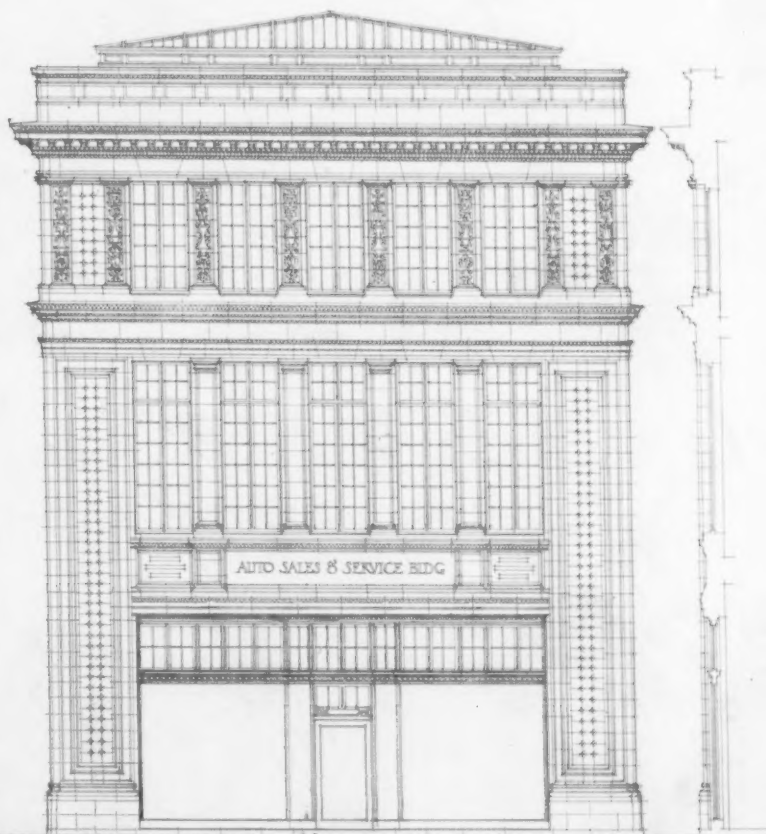
WALTER H. KILHAM,
J. LOVELL LITTLE, Jr.,
F. L. W. RICHARDSON,
Jury of Award.

COMPETITION DRAWINGS

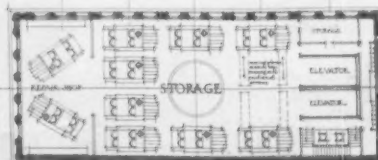
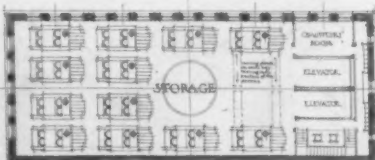
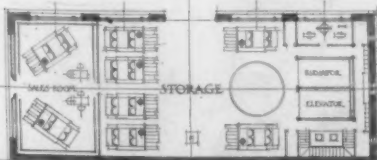
BRICKBUILDER ANNUAL TERRA COTTA COMPETITION



PERSPECTIVE SKETCH OF
GARAGE AUTO SALES & SERVICE BLDG.
FOR ALBERT ROBERTS & MARSH
Boston, Mass.



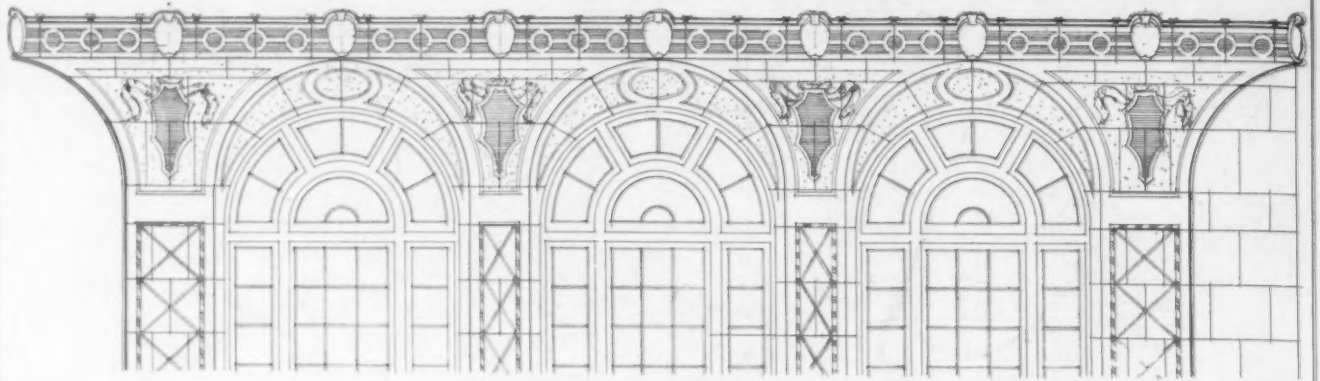
COLOR SCHEME
MAIN BODY COLOR
WARM GRAY-TERRA
COTTA TO HAVE A
DULL FINISH AND OR-
NAMENTS TO BE PICK-
ED OUT WITH BLUE-
GRAYS TO BE TOUCHED
WITH LIGHT TONES OF
YELLOW



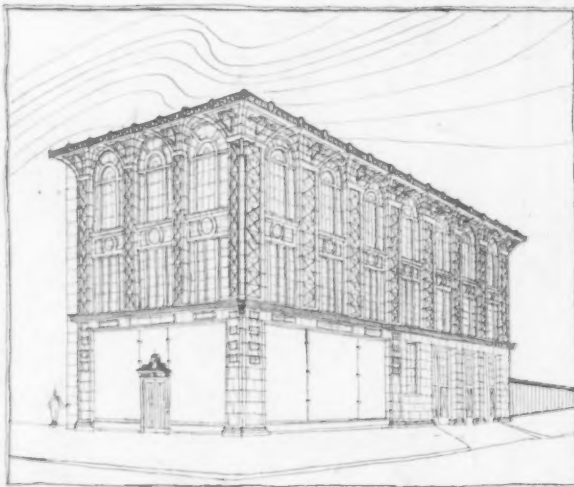
GARAGE AUTO SALES AND SERVICE BLDG

THIRD PRIZE DESIGN.

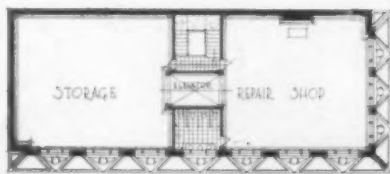
Submitted by Ralph Herman Hannaford, Roxbury, Mass.



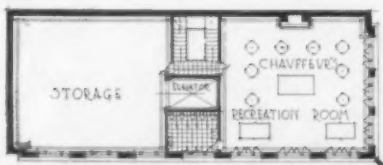
COLOR SCHEME
 BODY OF BUILDING TO
 BE MATT GLAZED TERRA
 COTTA OF AN OLD IVORY
 CREAM COLOR. THE
 COVES UNDER CORNICE
 ARE TO BE A DELLA
 ROBBIA BLUE WITH THE
 CENTER OF SHIELD
 IN GOLD. EDGED
 WITH A SOFT CREAM
 COLOR.
LEGEND
 CREAM BLUE GOLD
 SCALE FOR DETAIL
 ELEVATION
 PLANS



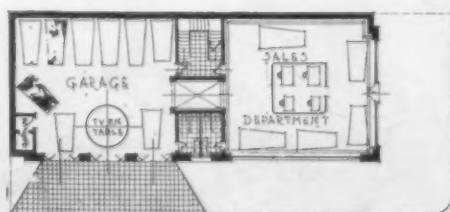
BRICKBUILDER
 COMPETITION
 FOR A GARAGE
 AUTOMOBILE
 SALES & SERVICE
 BUILDING
 SUBMITTED BY



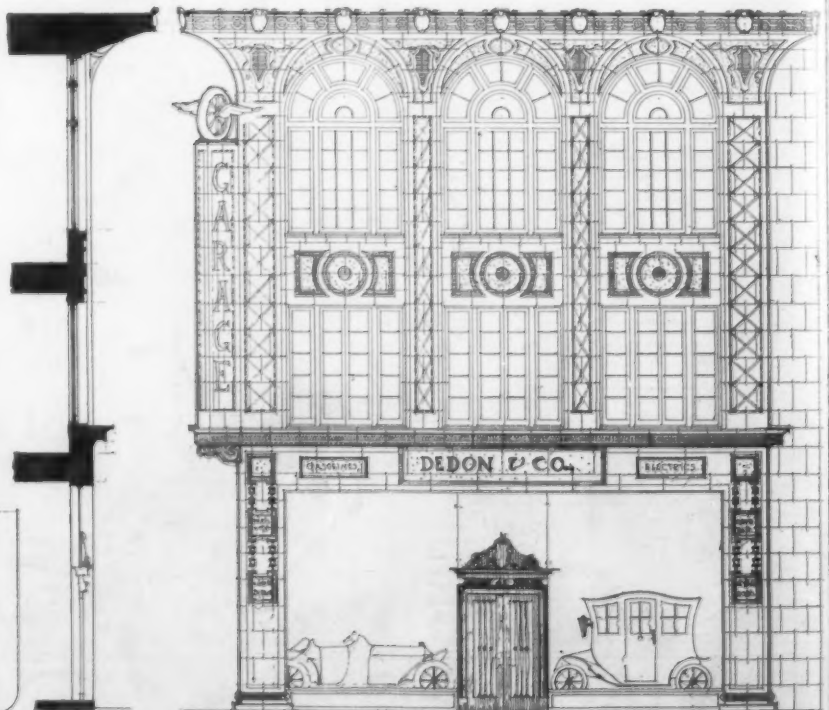
THIRD FLOOR PLAN



SECOND FLOOR PLAN



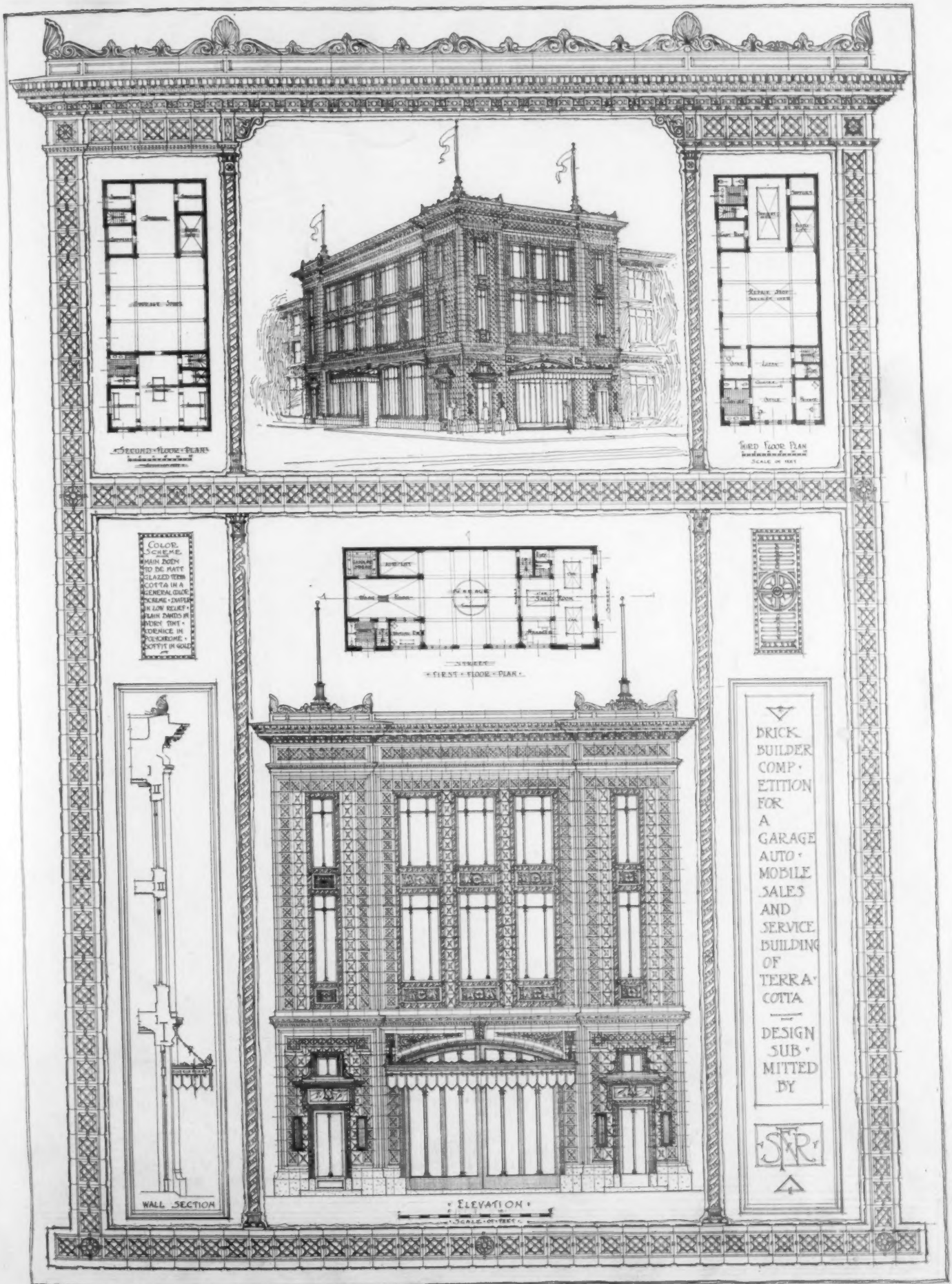
FIRST FLOOR PLAN



FOURTH PRIZE DESIGN.

Submitted by Arthur O'Neil Geddes, New York, N. Y.

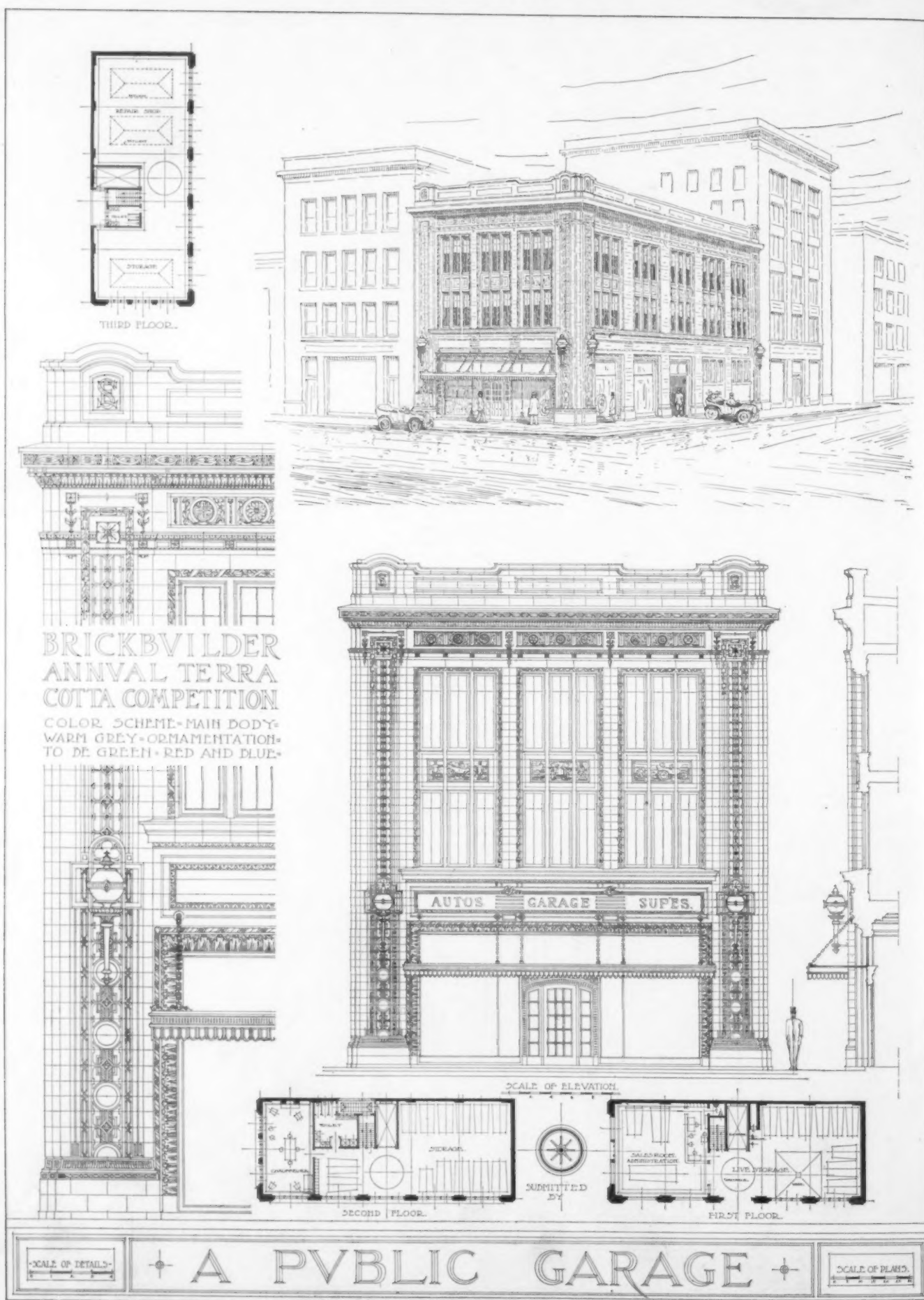
COMPETITION DRAWINGS



MENTION DESIGN.

Submitted by F. N. Roberts and S. Nesselroth, Boston, Mass.

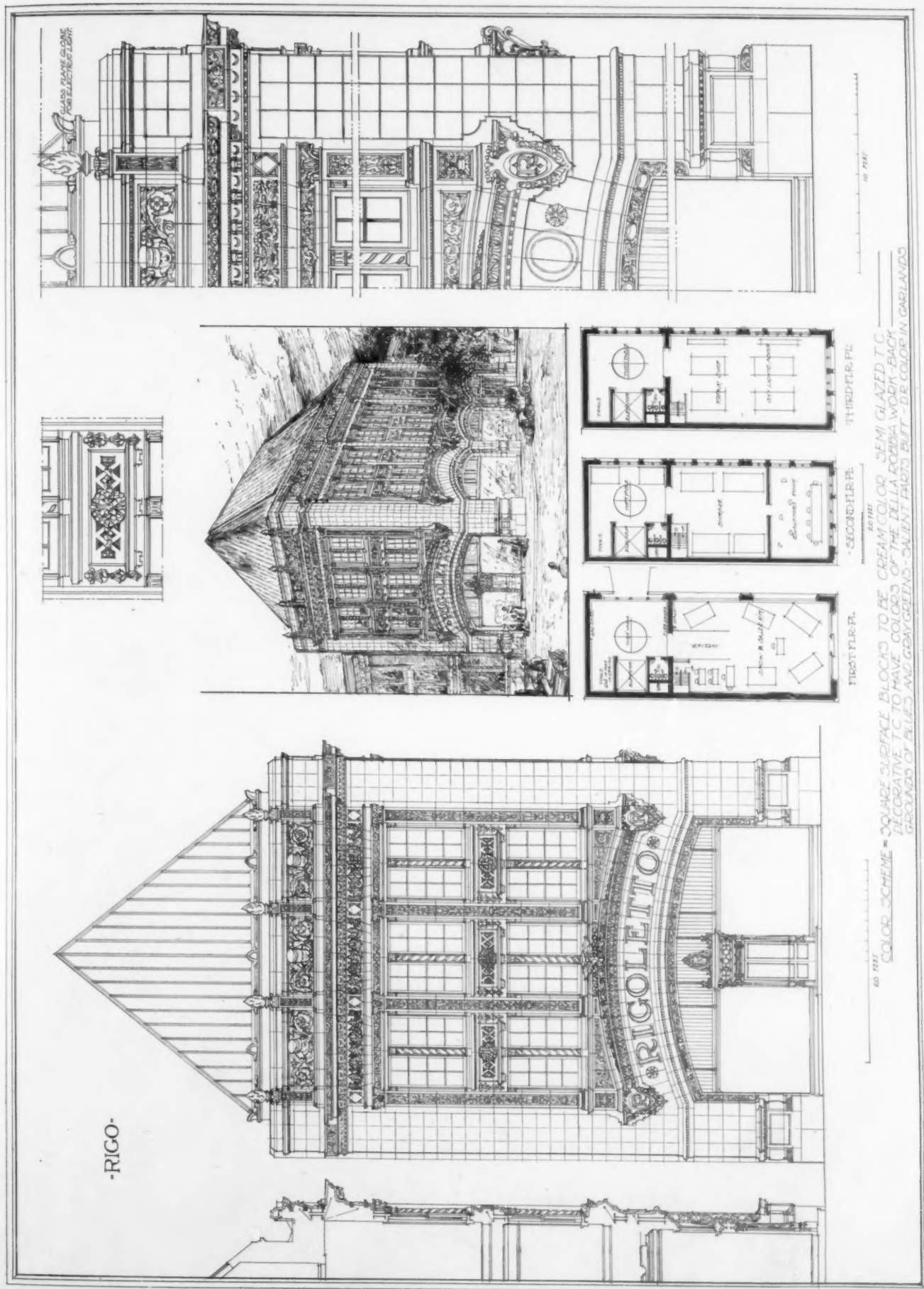
THE BRICKBUILDER



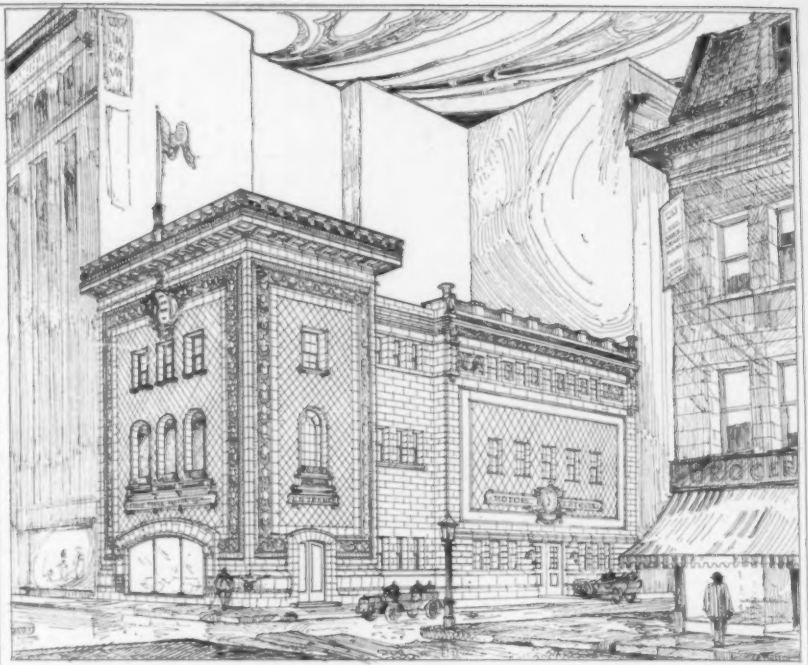
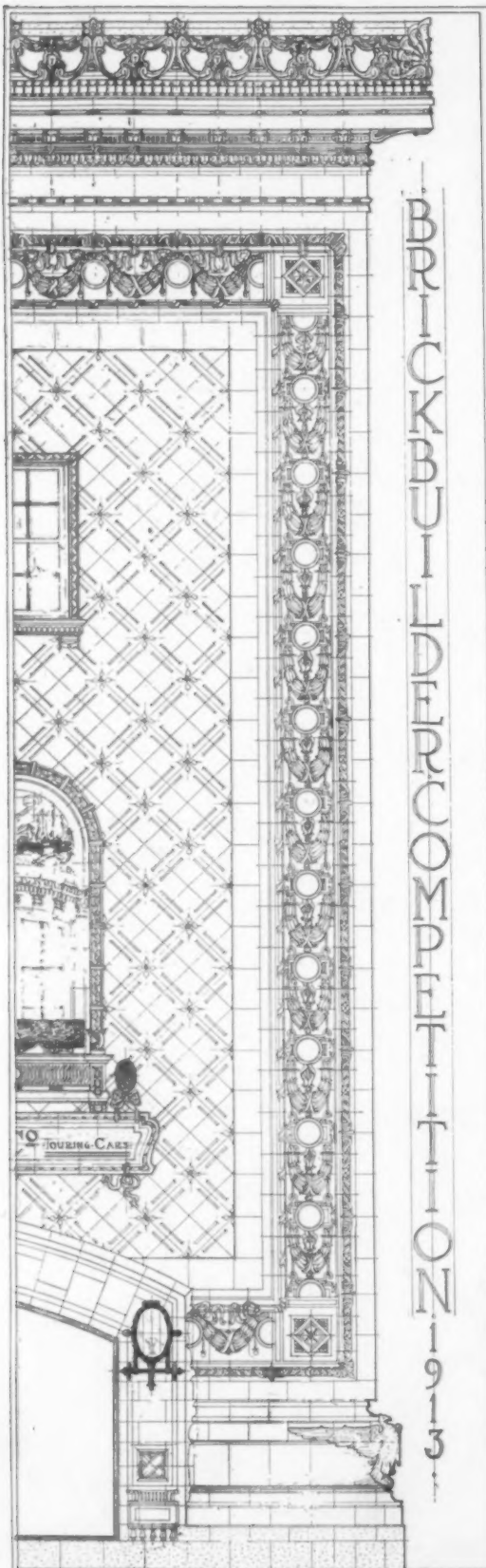
MENTION DESIGN.

Submitted by Frederick Scholer and Paul F. Esser, Chicago, Ill.

COMPETITION DRAWINGS

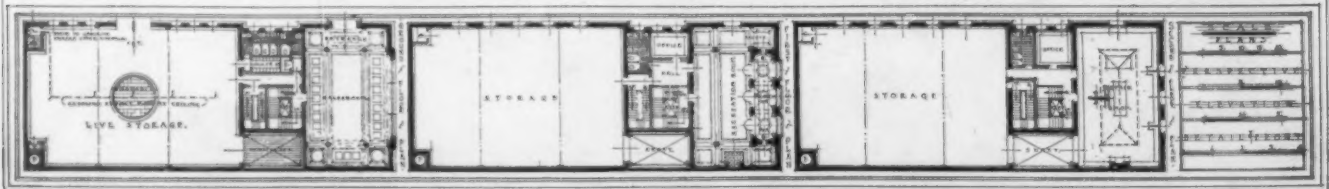
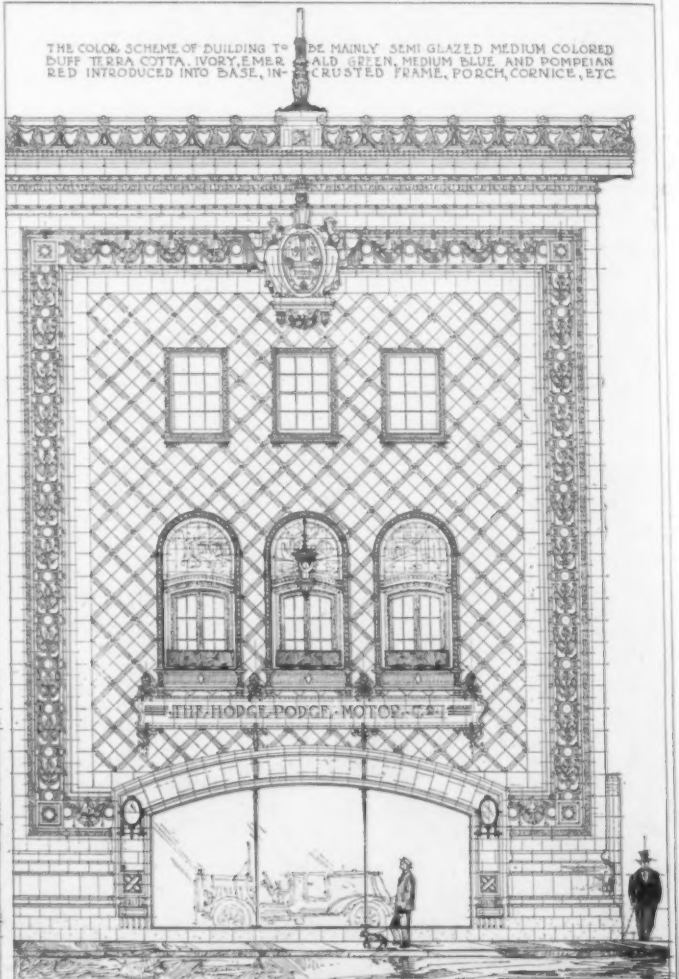
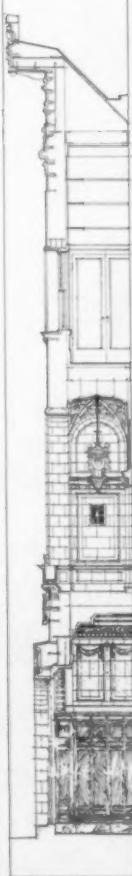


THE BRICKBUILDER



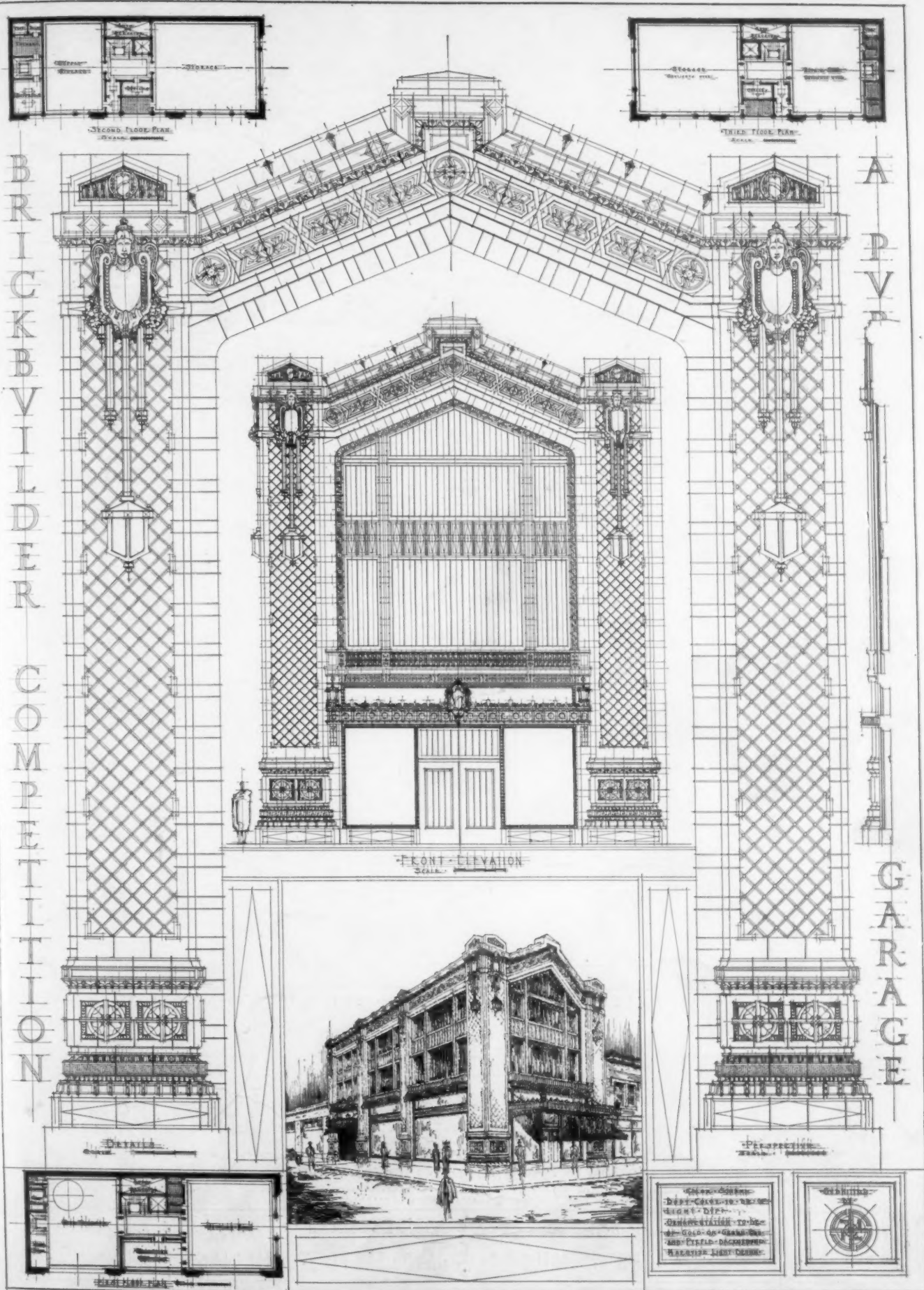
SUBMITTED BY
A.C.

THE COLOR SCHEME OF BUILDING TO BE MAINLY SEMI GLAZED MEDIUM COLORED
BUFF TERRA COTTA, IVORY, EMERALD GREEN, MEDIUM BLUE, AND POMPEIAN
RED INTRODUCED INTO BASE, IN CRUSTED FRAME, PORCH, CORNICE, ETC.



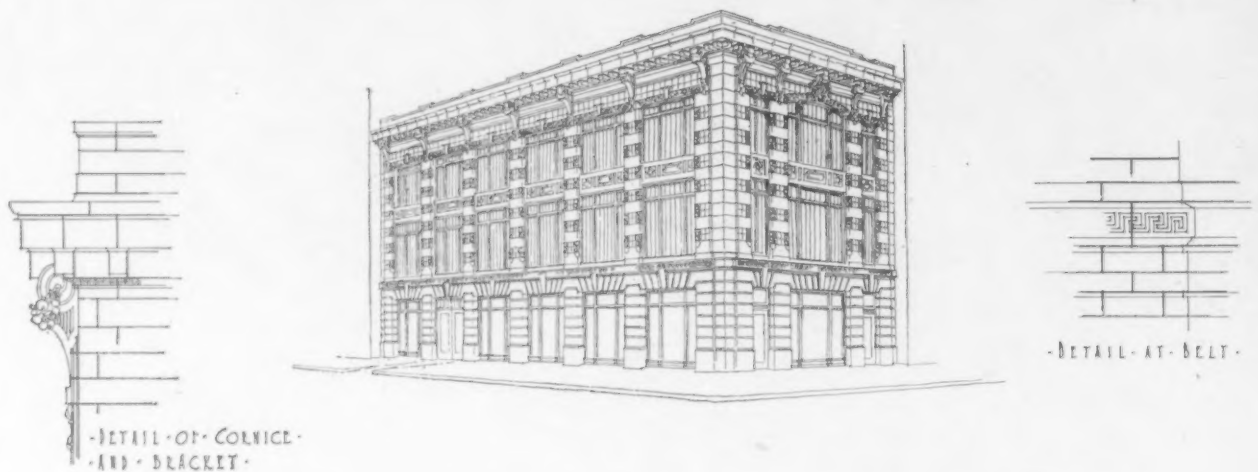
SUBMITTED BY ALBERT M. KIRSCHBAUM, BRONX, NEW YORK, N. Y.

COMPETITION DRAWINGS



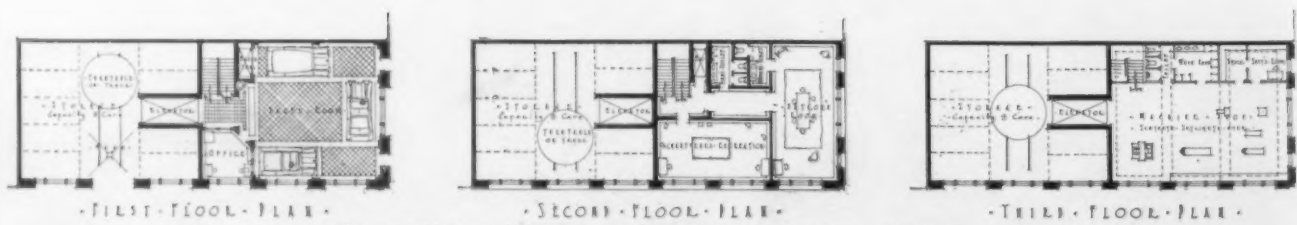
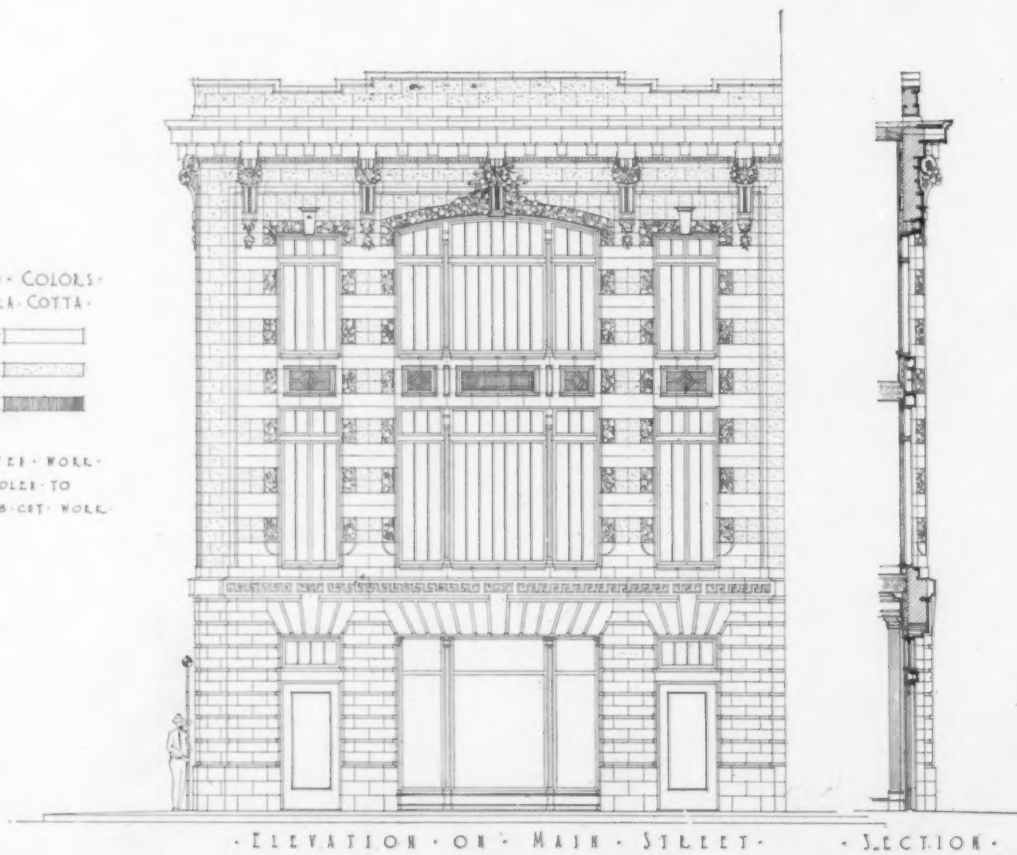
SUBMITTED BY RUSSELL L. MONSON AND MILTON W. MORRISON, SAN FRANCISCO, CAL.

THE BRICKBUILDER



- KEY TO COLORS •
- OF TERRA COTTA •
- CLEAN WHITE •
- DOTT •
- DEEP DOTT •

• LISTICATED WORK •
 • TO BE TOOK TO •
 • IMITATE B. C. T. WORK •



• GRAPHIC SCALES •
 • PLANS •
 • ELEVATION •
 • DETAILS •

• BRICKBUILDER COMPETITION •
 • FOR A •
 • GARAGE : AUTOMOBILE SALES AND SERVICE BUILDING •

• SUBMITTED BY •

SUBMITTED BY HOWARD ASAHEL GOODSPEED, WEST MEDFORD, MASS.

Architectural Terra Cotta—Its Rational Development.

BY M. STAPLEY

IN THE history of architecture, building with steel is the latest phenomenon. Its nature, consisting largely of mechanical perfection, demonstrates along with its adventurous height, its racial character. It is distinctly American, but when hidden under irrelevant masonry of traditional design it is difficult to classify as such. This raises the question whether a building is bound, ethically, to indicate its nationality and, even further, to affirm its method of construction. In all sincerity it is. In every great period of architecture it has done so; and when this fundamental truth was lost sight of, as in Michelangelo's day, the noble art of building declined. "The loss of conformity between material and constructive principle was the decisive cause of the decay of Renaissance architecture," wrote a great authority, Anderson. We are not conforming to constructive principle when we try to impress a stone character upon steel. It is not a true expression of modernity. It is a compromise between the last word in building, as said by ourselves, in metal, and the first word as said by the Greeks and Romans, in stone. Those who are eager to replace this compromise by sincerity turn to Architectural Terra Cotta. In it lies the nascent American architecture.

It is supposed that the architect who takes up designing in terra cotta knows, besides its practical advantages, something of its history in art, else it will be difficult for him to enter into the spirit which animates the material. The mere vague idea that the Renaissance men worked the material into beautiful ornament simply because it was plastic, will not carry our modern architect far. Agostino Ducci or the Della Robbias were doing more than taking advantage of its plasticity when they created beautiful ornament: they were expressing themselves and the spirit of their time. Other times, other manners.

As the Gothicists astounded the Middle Ages with the unbounded possibilities of stone, so have we astounded the modern world with the possibilities of steel structure. Why hide our achievement under traditional masonry. Excellence in art is the use of traditions only where they are compatible with present day requirements. Terra cotta could be made to express the gradations of the steel framework and repeat its lightness and grace; for structurability has its own beauty, as Roman ruins, devoid of all their original embellishment, still mutely testify. Terra cotta, observing the same nicety of proportion that steel observes, can impart this impressive beauty of structurability to American architecture.

This does not mean the mere piling up of terra cotta in courses as if each course upheld the next; but it does mean an intelligent application of terra cotta to its real supports in a way that would follow the construction and not be a mere unmeaning paneling that might be applied anywhere. The Campanile of Giotto, covered from base to summit with a veneer of parti-colored slabs of marble, inspired the Times Building in New York. But the modern architect took only its form, which he translated into a bold masonic expression, and passed by its exterior character of veneer. This beautiful exterior, which one sees at a glance, is a surface applied to some real structural material behind it, could have been utilized in terra cotta against steel here in our modern example.

Terra cotta could do away with heavy blocks of stone which, where they are not actually supporting a superimposed weight, are inexpedient as well as insincere. If the real work is done by steel the secondary material need be heavy enough only to screen against wind and weather. Above all must we avoid that double sham of specifying terra cotta in imitation of stone—nothing more than a money-saving substitute. In one of New York's newest edifices, it was first planned to simulate granite from the eleventh story up. The samples submitted were an excellent demonstration, even to their patches of quartz and mica, of the imitative possibilities of this material; but on account of their ethical influence on architects, builders and manufacturers, they were wisely abandoned. If manufacturers were tempted to push this clever making of fac-similes to its uttermost, a material really beautiful in itself would soon lose its identity.

In building with terra cotta large unbroken areas should be avoided. This can be done in various ways: by setting back some courses and projecting others, or by ornamenting alternate blocks with a sunken pattern or an almost flat relief; or, certain blocks might be enlivened by some device peculiar

THE BRICKBUILDER

to the owner or purpose of the building as Roman bricks were, and as we are doing now in some of our modern brickwork. Any such tentative would tend to break up agreeably an area which, if left plain, magnifies the unevenness of the material. There is a whole delightful field open in this question of expressing the plasticity of terra cotta without accentuating its irregularities. The admirable low relief of the terra cotta at Sutton Place, one of the earliest English mansions where it was used structurally, shows how the old builders felt the kind of design peculiar to their material.

Next comes the alluring question of color. It haunts even the most conservative moderns; less conservative ones it provokes into action; but only, thus far, timid action. It is an old tradition that color is suitable only for sunny climes and that it makes no appeal to northern tastes; and so we have built streets of dreary brown stone Victorian mansions in our residential sections, and "grimy hives of industry" in our business sections. They stood as man's rebuke to Nature for daring to array herself in beautiful tints; until now we are growing up and becoming broad-minded. That city-bound Americans are hungering for color is evident by the interest provoked by even the timidest introduction of glazed tiles into a modern building.

To be sure all building materials have color in some degree, but only in terra cotta is it possible for the architect to control and vary it in order to secure some definite color scheme. Manufacturers are constantly experimenting with colored terra cotta with most interesting results; they are ready to do their share as soon as that hard-headed factor, the investor, can be rendered a little more venturesome or a little less prejudiced. He was easy to convert when the question of fantastic height was put before him—that was a venturesomeness that yielded a very material return. Color does not—at least not so obviously.

Polychrome architecture is not only beautiful in itself, but it would tend to revivify our almost obliterated color sense; furthermore, it would increase public interest in buildings. Anything that will fix attention on the nation's architecture is to be welcomed and encouraged (even by the investor, could he but see it). In accomplishing this, terra cotta stands to-day as the most efficacious servitor that American architecture has.



TERRA COTTA DETAIL OF CHURCH AT PAVIA.

Automobile Sales and Service Building and Public Garage.

By J. L. SNOW

(of the Peerless Motor Car Company)

A FEW years ago when the automobile business was in its infancy, any sort of store was good enough for a salesroom. Public storage stations at this time were not known. With the development of the business however, a building complete in all its details has become a necessity.

THE AUTOMOBILE SALES AND SERVICE BUILDING.

The automobile sales and service buildings erected within the last two years have been located, and quite properly so, on some of the main automobile thoroughfares, convenient and adjacent to the business and residential part of the city.

Construction: The construction of these buildings should be fireproof. The exteriors should be of brick and terra cotta so that they will be to a certain extent ornamental as well as useful. The size and height of the building must be determined entirely by the class, or rather the size, of the goods handled and the amount of business to be done, allowing always for a natural growth. To-day the size of touring cars and commercial vehicles is very well standardized and no radical changes are likely to be made for a number of years. The sale of pleasure cars is not likely to be increased a great deal. Good authorities admit that the market of new purchasers is pretty well supplied, and that the total business done from now on is more likely to decrease rather than increase. This is not true of commercial vehicles or trucks. They are coming into more general use and provision should be made for an increased business of at least 200 per cent within the next three years.

There is no question but that the ideal building would be one story high and long enough to take care of the sales and service departments all on one floor. This building should be constructed on a corner, with windows on at least three sides—four if possible, and additional light should be obtained by skylights in the roof. A building of this type would give the maximum amount of efficiency with the minimum amount of overhead expense. As it would be impossible and decidedly impractical to erect such a building in a large city, it is necessary to consider the next best thing—a building with two or more stories.

An adaptable building for the automobile business should have at least 90 feet frontage and 100 to 200 feet depth. A corner site should be selected if possible. The building should extend the entire length between two streets, preferably a main thoroughfare and a back street of sufficient width to permit automobiles to be operated in both directions. This arrangement will permit having windows on three sides. The greater portion of party wall can be utilized for elevators, offices, staircases, stock rooms, toilet rooms, locker rooms, etc., leaving the centre and outside portions of the building available for working space. This is as near the ideal as could possibly be obtained.

The construction of the inside of building as well as the outside should be of fire-proof materials. In a building 90 feet wide there should be two rows of columns. The supporting columns should be at least 30 feet apart. This arrangement will increase the cost of building, but will facilitate the handling of cars and reduce the operating expenses more than enough to offset the additional expense.

The distance between the floors will have to be governed somewhat by the height of building. The first floor on which is located the salesroom and company's garage should be about 16 feet high. The succeeding floors, containing general offices, stock room, repair shop, etc., should be about 11 or 12 feet high. There is no class of vehicles built to-day which would require more clearance except trucks with special bodies such as used on sight seeing cars or something on this order.

First Floor: The first floor can be utilized for salesrooms, with storage space and repair shop entrance in the rear or on one side. The salesroom should, of course, extend the full width of building in front, and be from 40 to 60 feet deep. This will give ample space for exhibiting from eight to twelve cars or trucks. One side or corner of the salesroom should be partially partitioned off from the rest of the room for a sales office.

The remaining portion of the first floor should be used for general storage of the company's cars—new, second-hand, or demonstrators. The equipment of this department for taking care of cars would include wash stand, oil and gasoline pumps connected with tanks located in the basement of

THE BRICKBUILDER

building in a suitable manner to comply with the insurance regulations. Special attention should be given to the wash stand, lighting same so that work can be done in the quickest and best possible manner both day and night. Turntables of sufficient strength and size to handle the largest cars and trucks should be installed in the centre of the building, one directly in front of the elevators. On other floors only one turntable should be necessary—located in front of elevators.

Second Floor: On this floor arrangements can be made for executive, general and superintendent's offices, and stockroom; if space permits, a storage room for new or second-hand inactive cars. Special attention should be given to the location of stock room, making same convenient and easily accessible to the repair shops, probably by one of the main stairways. Another entrance to the stock room should be provided for purchasers of parts and supplies. This can be located near the service department office, and should extend only to the second floor.

All floors above the second should be used for general repairs. This department will necessarily need a complete equipment of machinery, forges, benches, vices, etc., which should be selected and arranged by the superintendent. As most of the machinery in an establishment of this kind has only intermittent use, it is advisable that it be operated by direct-connected electric motors. On account of the insurance companies' objections to open fires in buildings containing automobiles, special arrangements will have to be made for partitioning off the forge rooms. If it is not convenient to do this, gasoline can be removed from all cars on the floor in this department.

Paint Shop: If a paint shop is a part of the equipment, and I believe it quite necessary in the modern automobile sales and service station, it should be located on the top floor. A separate room should be provided for the finishing or varnishing of cars and bodies. This room should be sub-divided by large sliding doors so that each part can be used alternately as a work-room and dry-room. Large radiators should be installed, so that a temperature of 80 degrees can be easily maintained even in the coldest weather.

On this floor should be centrally located a wash stand or rubbing deck on which cars and bodies can be washed and rubbed down between their various painting coats.

The Automobile Salesroom: Special attention and consideration should be given to the automobile salesroom to make it as attractive as possible. For the floors, Terrazzo made of red cement, and not gray, laid down in 12 inch tiles, is unquestionably the best and most practical material that can be used. This material will not be discolored by oil and is easily kept clean. The walls should have a high wainscoting of oak or some other suitable but not expensive wood. The upper part of walls and ceilings should be finished in colors to harmonize with the wainscoting. The windows of the salesroom should be made as large as possible, and transoms provided for ventilating purposes. In addition to the chandelier lights, provision should be made for lighting the show windows at the floor and near the ceiling.

Elevators: To provide adequate service to all floors, there should be at least three and possibly four elevators in a building of this kind—one in the salesroom, running from the first to the upper floor. This if possible should be arranged so that it will open directly into the sales office. The best type is automatic, with safety doors. To facilitate the handling of large and heavy parts throughout the building, a small freight elevator should be provided for the stock room. This should run from the basement, through the repair departments, and to the upper floor. It is not necessary that it be automatic, but it should be provided with safety doors. The large freight elevator, located nearly opposite the service department entrance, should be approximately 24 feet long and 10 feet wide, with a carrying capacity of about 17,000 pounds. The distance between floor and beam should be approximately 10 feet, 6 inches. In many buildings, particularly large ones, it is quite necessary to have two elevators.

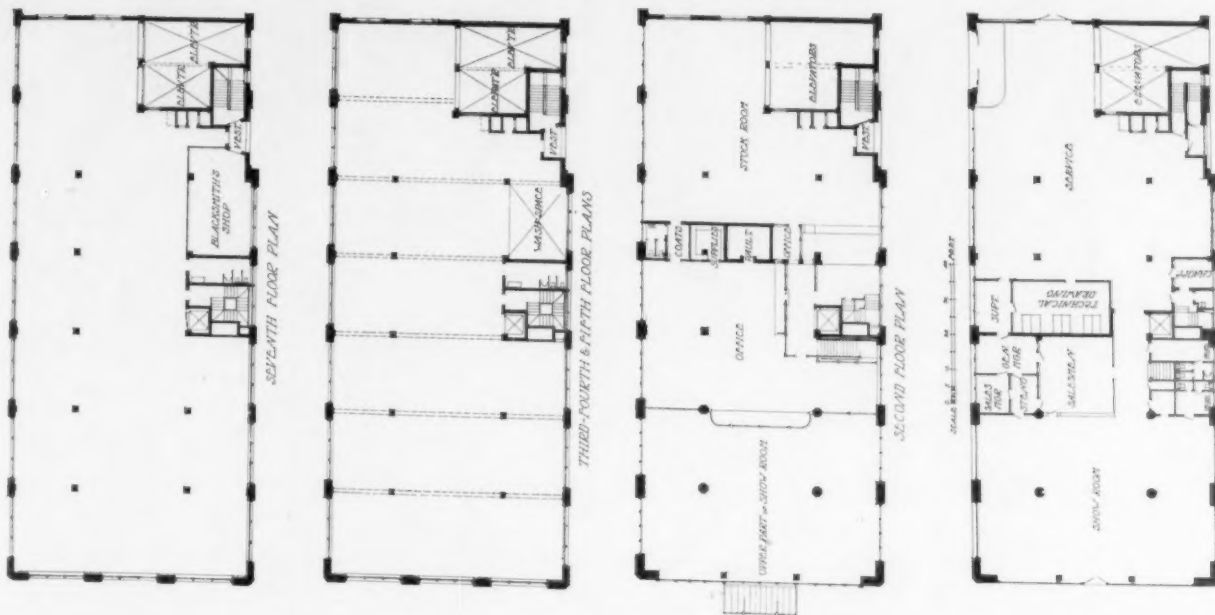
A large number of garages derive a considerable revenue from installing pool tables, and renting space to barbers who cater particularly to the chauffeur trade.

Special lockers should be provided for the storage of clothes and robes. These should be located as near as possible to, preferably in back of, the chauffeur's car.

In a building used exclusively for storage purposes it would be necessary to install a number of wash stands, probably two on the main floor. Most of the cars in active service are washed at night and the capacity of each stand would be about ten cars a night. In a very large building, with accommodations for fifty or more cars, it will probably be necessary to install a wash stand in some other part of the building, preferably on the second or third floor to relieve the congestion on the first floor.

Gasoline and oil tanks of very large capacity should be located in the basement and should be connected by pipes and pumps to the main garage floor. A supplementary and portable tank on wheels should be used for filling cars with both gasoline and oil throughout the entire building.

GARAGE PLATES

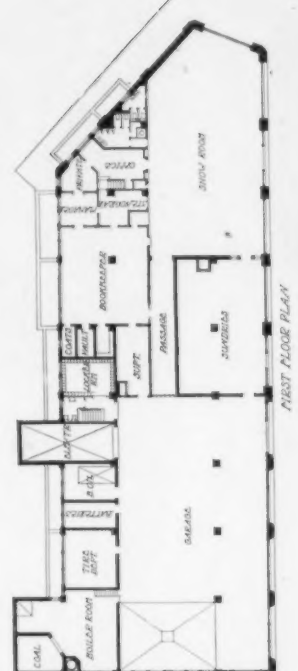
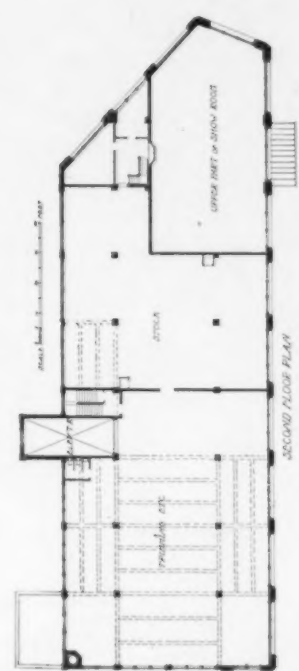
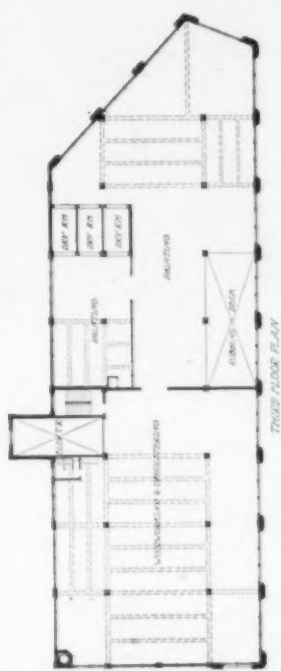
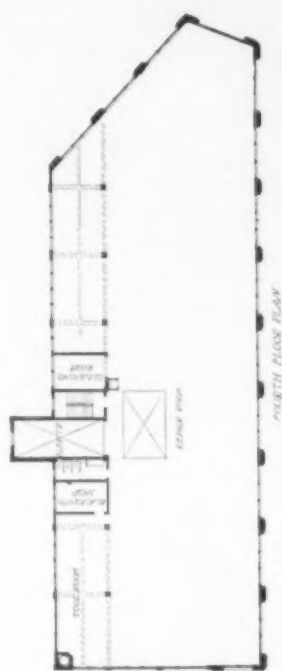


SERVICE BUILDING FOR THE PACKARD AUTOMOBILE COMPANY
at Philadelphia, Pa. Albert Kahn, Architect and Ernest Wilby, Associated.

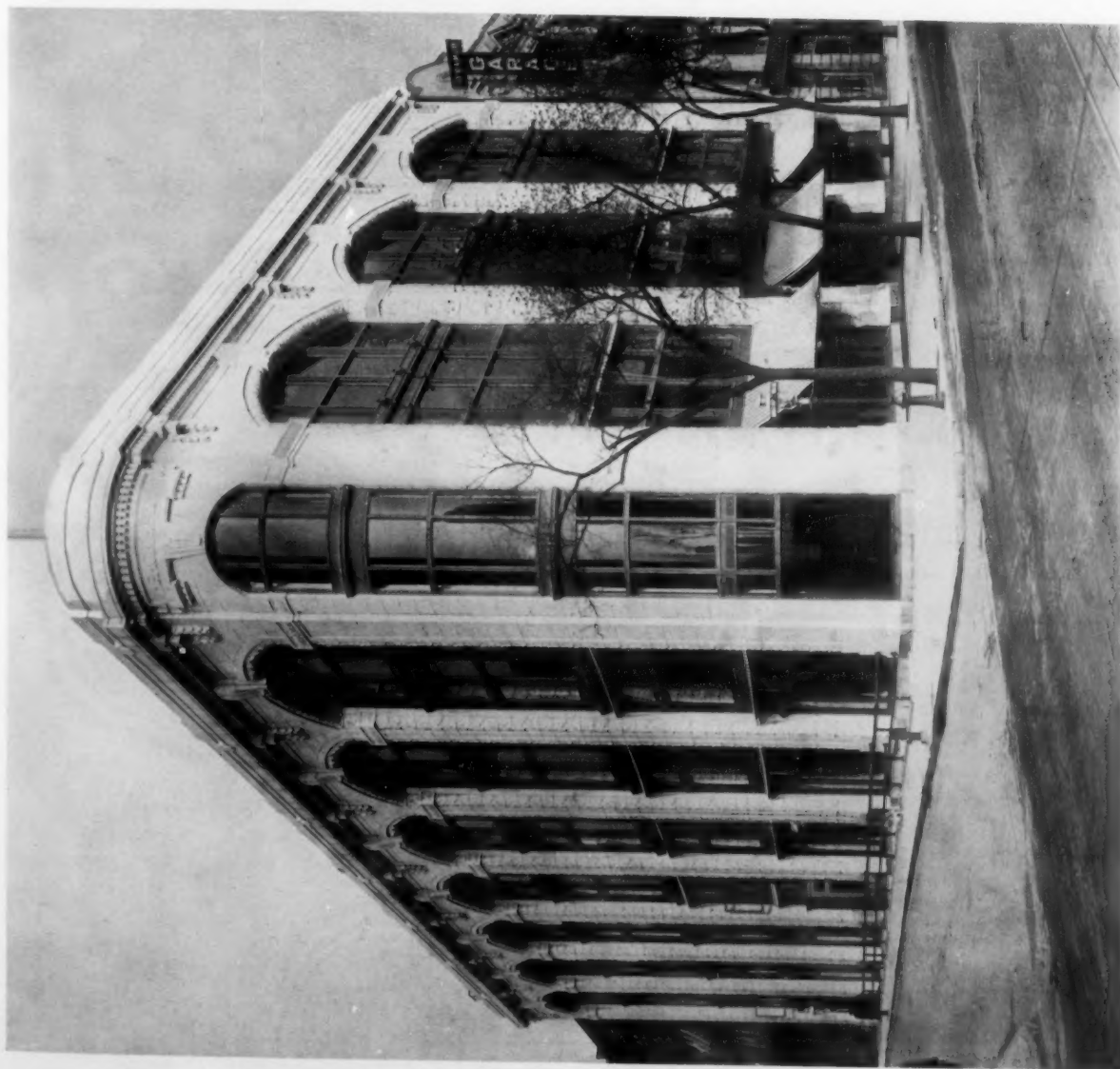
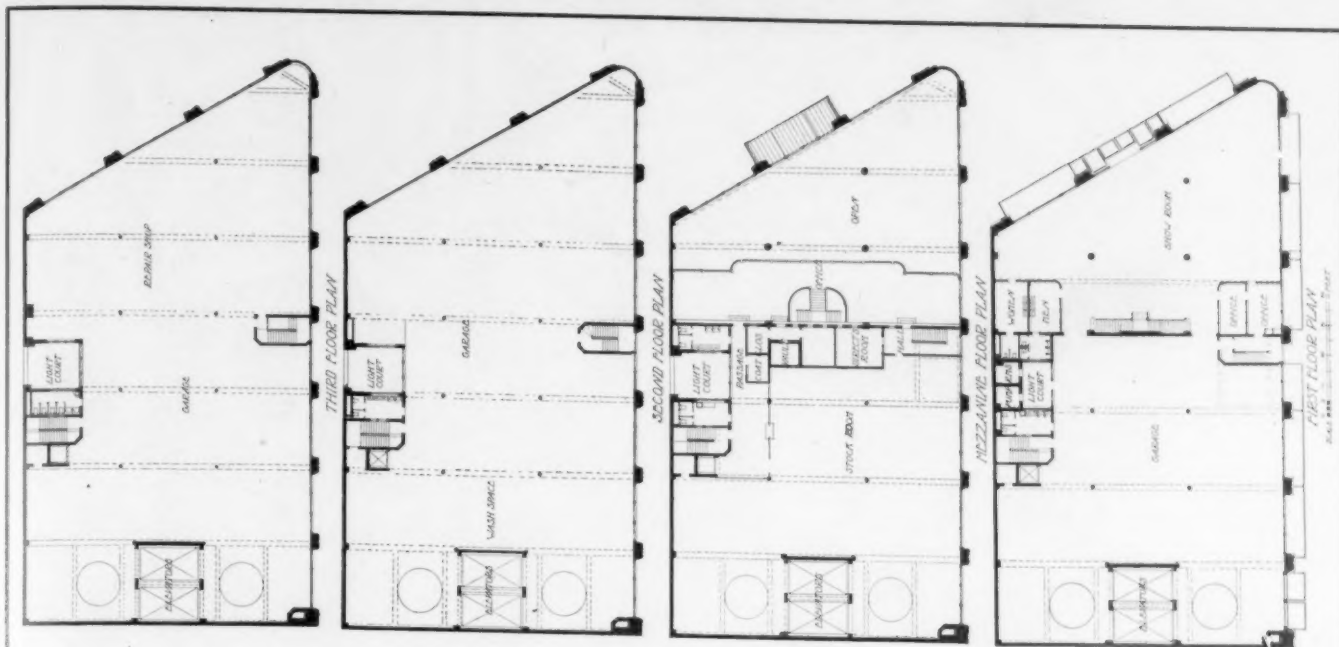
THE BRICKBUILDER



SERVICE BUILDING FOR THE PACKARD AUTOMOBILE COMPANY
at Pittsburgh, Pa.
Albert Kahn, Architect and Ernest Wilby, Associated.

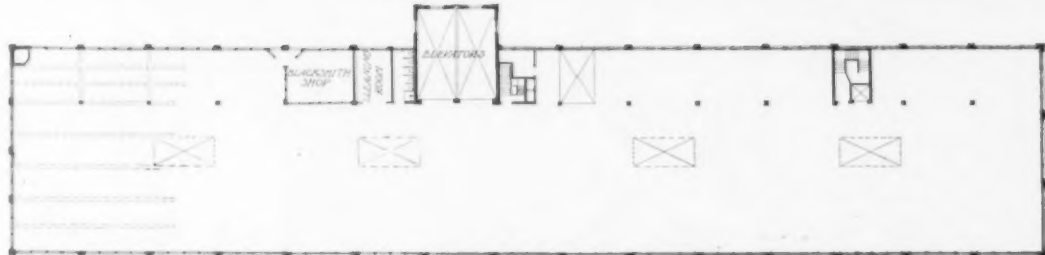


GARAGE PLATES

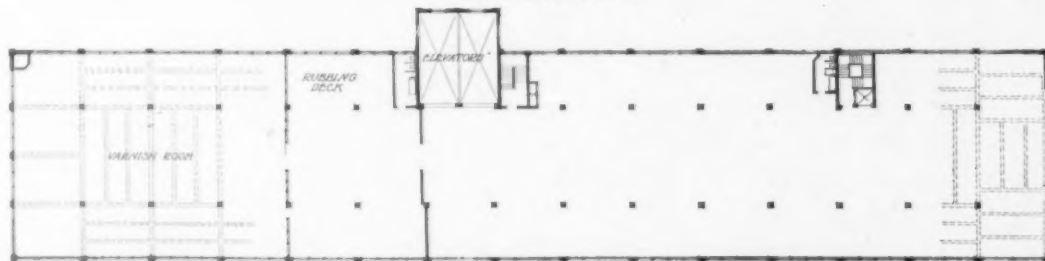


SERVICE BUILDING FOR THE PACKARD AUTOMOBILE COMPANY
at New York City.
Albert Kahn, Architect and Ernest Wilby, Associated.

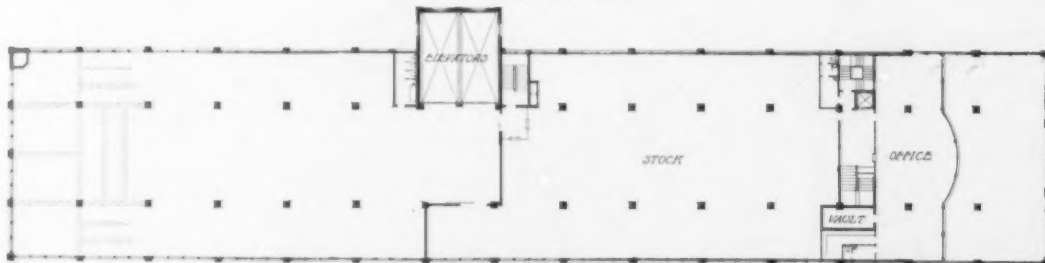
THE BRICKBUILDER



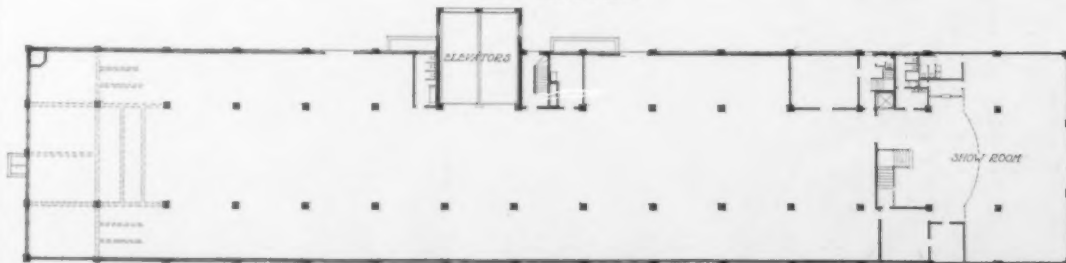
FOURTH FLOOR PLAN



THIRD FLOOR PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN

SCALE 1/8" = 1'-0"

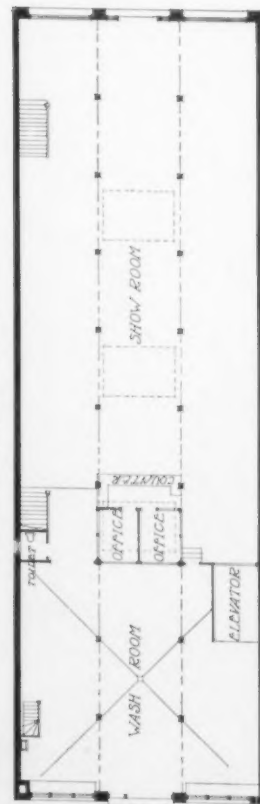
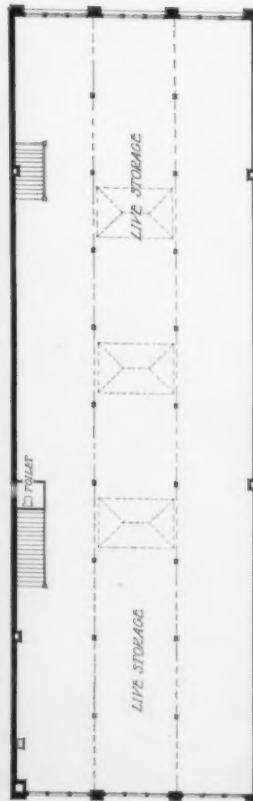
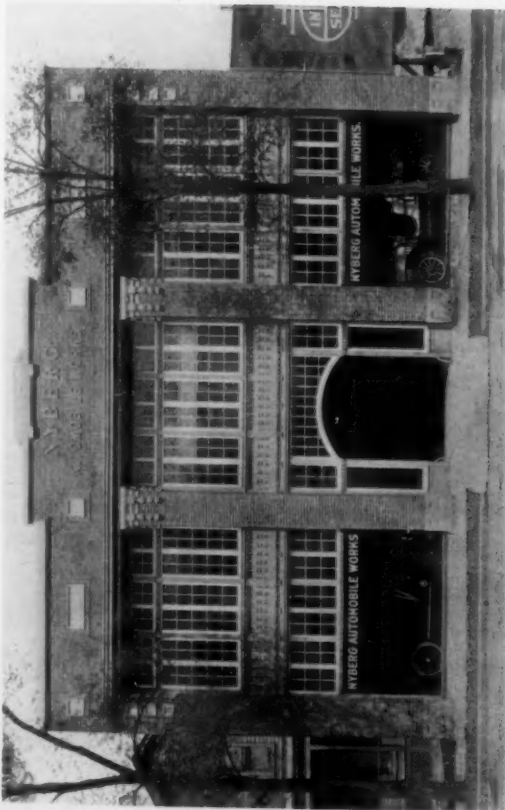
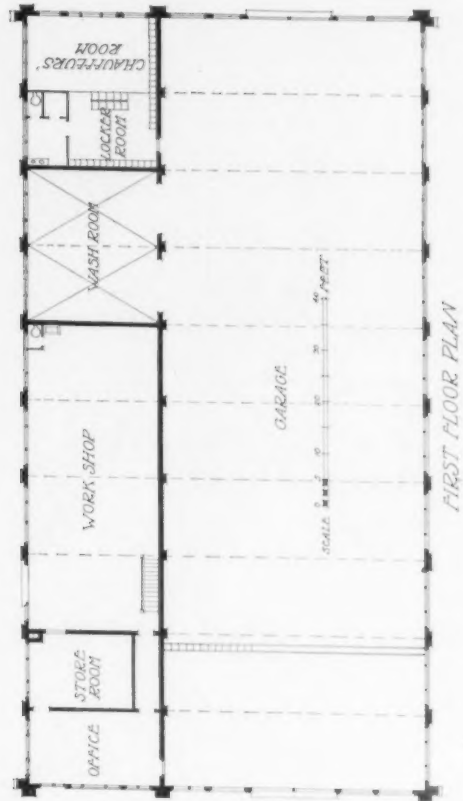
SERVICE BUILDING
FOR THE
PACKARD AUTOMOBILE
COMPANY
at Boston, Mass.

Albert Kahn,
Architect
and
Ernest Wilby,
Associated.

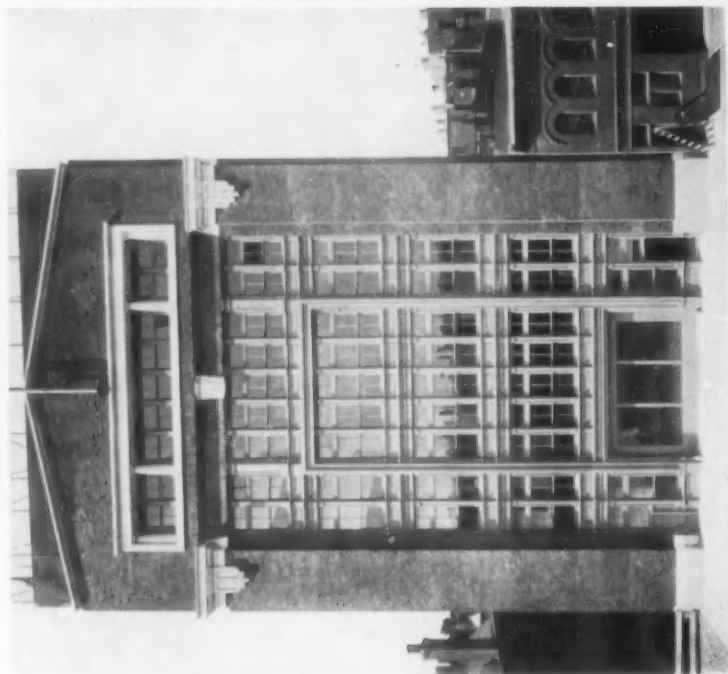
GARAGE PLATES



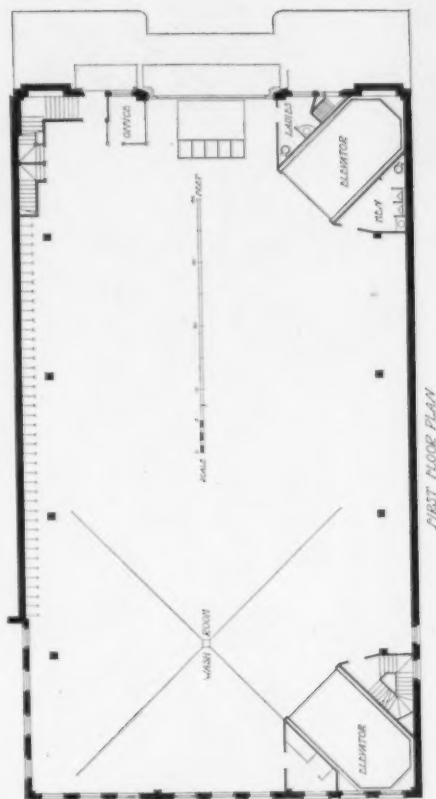
PUBLIC GARAGE.
Garden City, Long Island, N. Y.
Aymar Embury II
Architect.



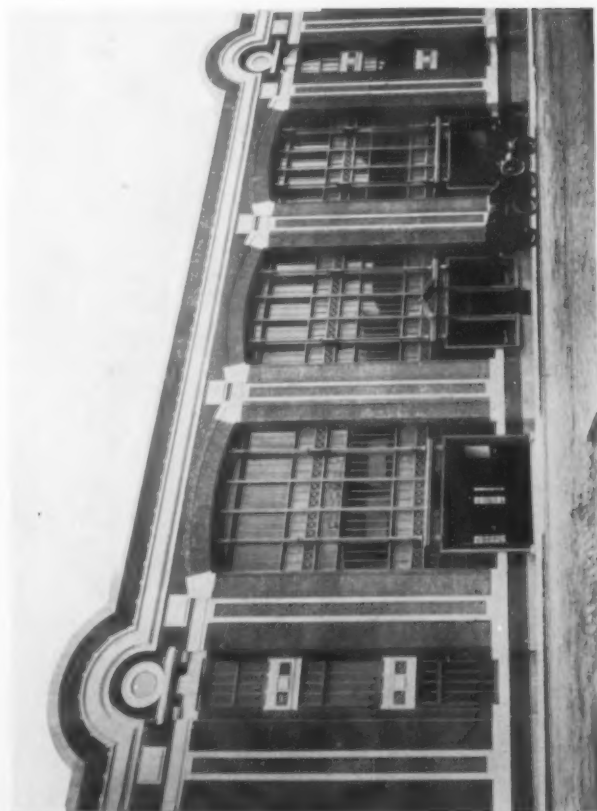
SERVICE BUILDING FOR THE NYBERG AUTOMOBILE COMPANY
at Chicago, Ill.
Howard Van D. Shaw, Architect.



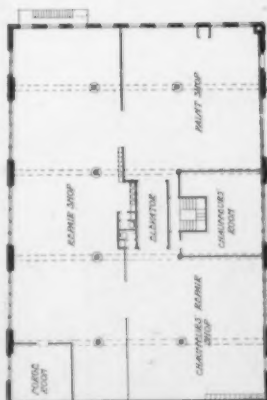
SERVICE BUILDING FOR THE WHITE AUTOMOBILE COMPANY
at Boston, Mass.
Clinton J. Warren, Architect.



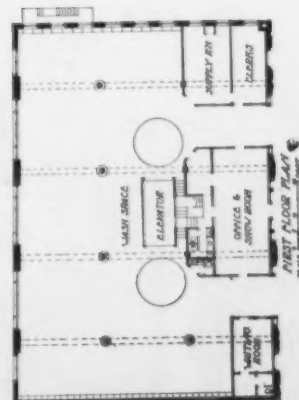
FIRST FLOOR PLAN



PUBLIC GARAGE
AND
SERVICE BUILDING
at Boston, Mass.
Calvin Kriessling, Architect.

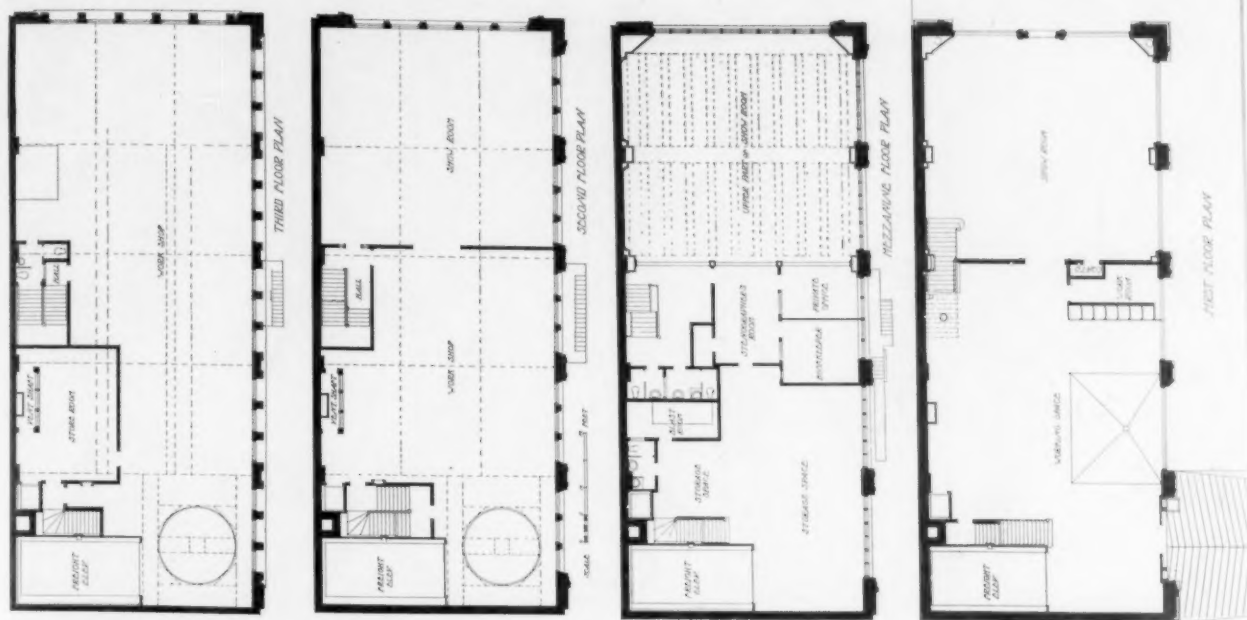


THIRD FLOOR PLAN

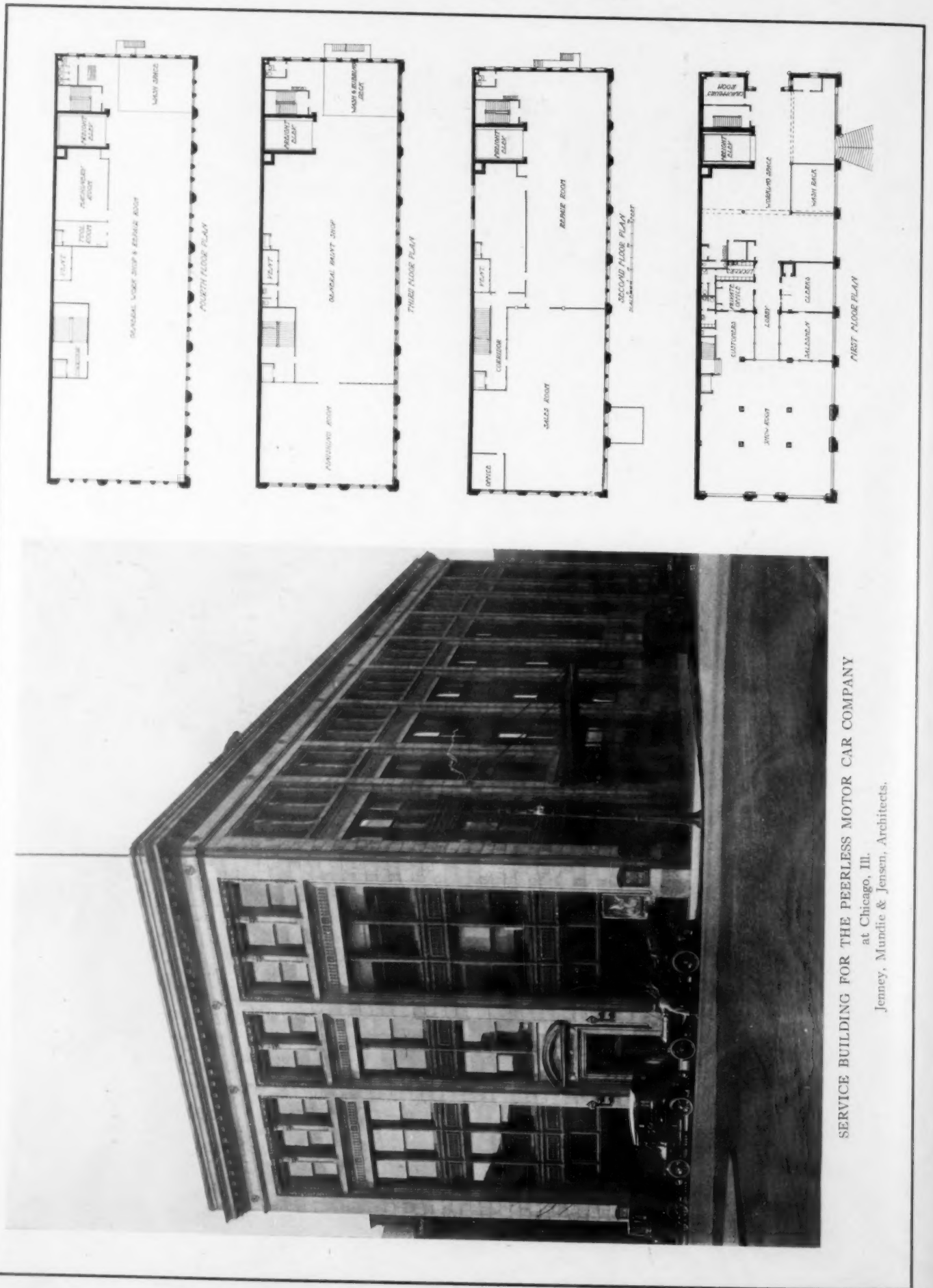


FIRST FLOOR PLAN

GARAGE PLATES



SERVICE BUILDING FOR THE AMERICAN LOCOMOTIVE COMPANY
at Chicago, Ill.
Jenney, Mundie & Jensen, Architects.

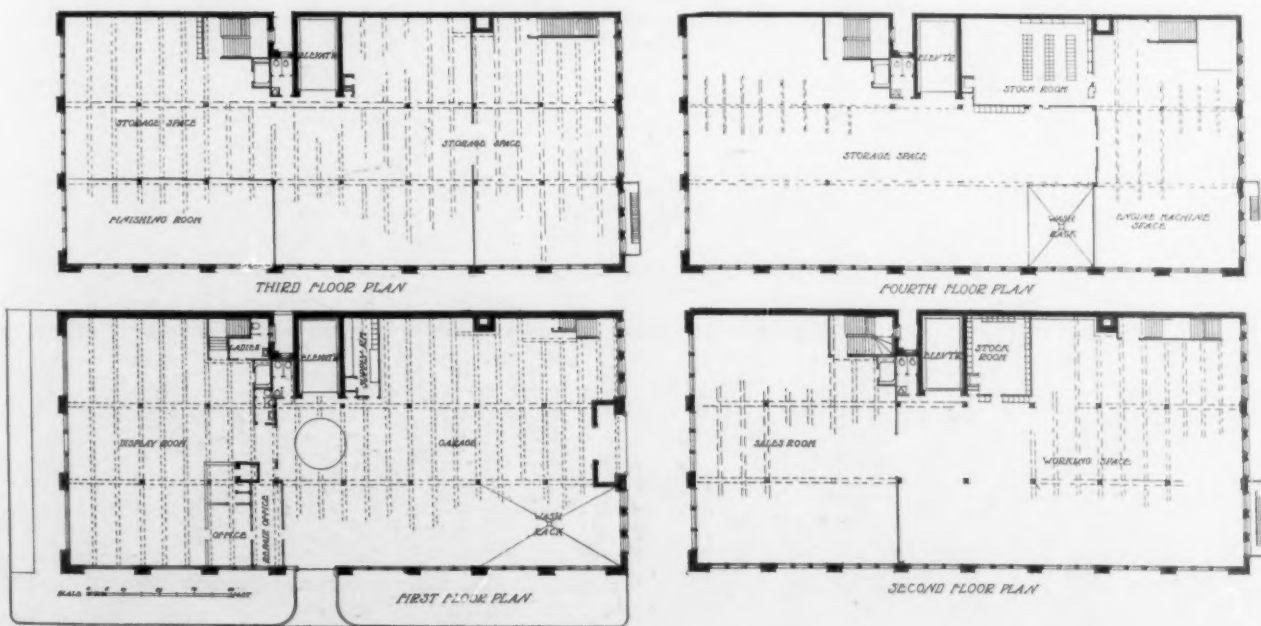


SERVICE BUILDING FOR THE PEERLESS MOTOR CAR COMPANY
at Chicago, Ill.
Jenney, Mundie & Jensen, Architects.

GARAGE PLATES



GARAGE AND SERVICE BUILDING FOR THE STODDARD-DAYTON COMPANY
at Chicago, Ill.
Holabird & Roche, Architects.

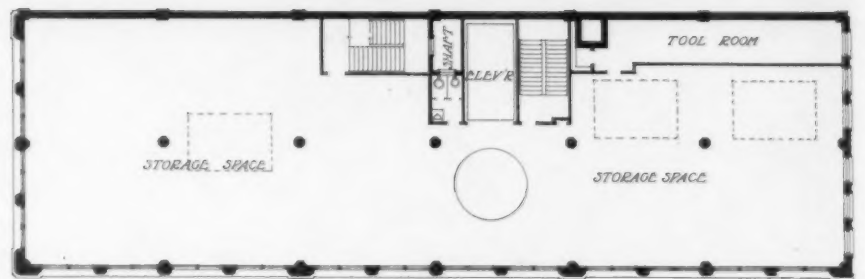


THE BRICKBUILDER

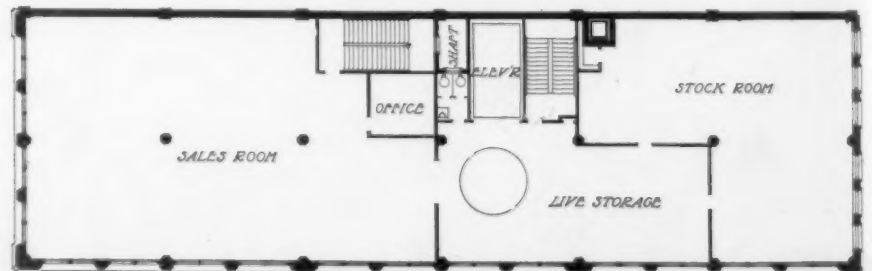


GARAGE
AND
SERVICE BUILDING
FOR THE
THOMAS FLYER
at Chicago, Ill.

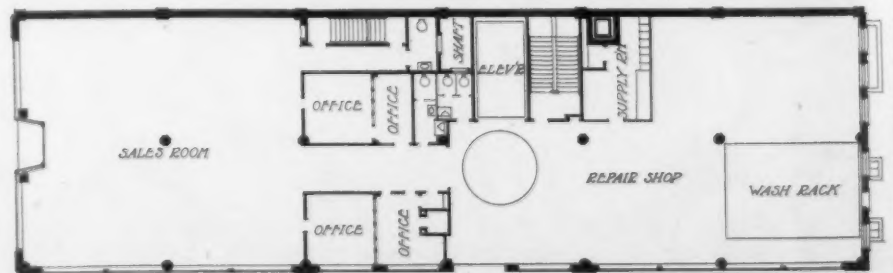
Holabird & Roche,
Architects.



THIRD FLOOR PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN

SCALE 1/4" = 1'-0"

Fire Protection of a Public Garage.

BY F. E. CABOT

(Chairman, National Fire Protection Association)

THE fire protection of a public garage may properly be considered under three heads:

First, the protection of the structure itself against damage by fire originating either inside or outside of the building.

Second, the protection of the contents of the building against fire from the outside.

Third, the arrangement of the building so as to reduce to a minimum the probability of fire starting inside the building, and the limitation, so far as may be possible, of the damage from fire if it should start within the building.

To attain the first point we must of course construct the building of material which will not itself burn, and which will, so far as possible, remain unhurt when fire comes in contact with it.

With the lesson of the conflagrations in Baltimore and San Francisco before us, and with the knowledge of the damage done to buildings, not in themselves combustible, by exposure fires, we cannot forget the distinction between mere absence of combustibility and the proper resistance to fire feeding on fuel from other sources. The materials used in the construction of the building, especially on the outside, must be such that they will not readily crack or spall when seriously heated. The metal parts carrying weights, or so placed that their expansion or distortion will injure the building, must be thoroughly protected against heat and flame. Where it is not possible to protect metal parts not carrying weight, they must be so designed that when they expand they will not seriously injure or displace other parts of the building. In the fire at Baltimore much of the damage to the outside of one of the largest office buildings came from the expansion of the metal members forming the finish of the window. This threw out of place the terra cotta slabs which formed the exterior finish between the window openings and made it necessary to replace these slabs even where they were not in themselves damaged.

In other fires in non-combustible buildings the necessity of thoroughly protecting all metallic structural members against excessive heat has been amply demonstrated. In fact, in more than one case the injury to the structure by over-expansion of steel members has been greater than all other damage to the building done by the fire. Again and again it has been shown that a metallic lathing, even though well covered with hard plaster, is not an adequate protection for the steel members of a roof structure which have no other heat-resisting covering applied directly to them.

Of course, all exterior openings must be well protected, and for this purpose nothing better has been found than wire glass in properly designed frames for the windows, and non-combustible heat-resisting doors for other openings. This protection should always be used unless there are wide spaces free from combustibles in front of them.

It would seem hardly necessary to urge the omitting in such a building all finish of a combustible nature, and yet it is rare that we find a building where this policy has been rigorously carried out. Interior partitions and closets are much more easily made of wood than of metal, terra cotta or concrete; window frames and doors are more quickly set in place when of wood than when of metal, but modern construction has given us ways of doing this work so that it can no longer be necessary nor advisable to use any wood in such a building.

There will be of necessity a very considerable amount of combustible contents, and more danger of the starting of a fire in a garage than in most mercantile buildings and every precaution should be taken to reduce to the minimum all unnecessary fuel.

To protect the contents from fire outside of the building we need to add but little to the protection indicated above for the building itself. It is wise to sub-divide the building wherever this can be done without interfering with its use as a garage, but we must always remember that any restriction on the proper use of the building reacts against itself. Construction which makes it difficult to use the building conveniently leads either to changes in its arrangement or to its misuse. It is of no use to put in partitions or fire doors which prevent the easy handling of cars; the partitions will be torn down and the doors left unclosed or fastened out of the way, and the result will be worse than if such subdivisions had not been made. We do not believe, however, that the skill of our architects and engi-

THE BRICKBUILDER

neers is so limited that they cannot combine reasonable sub-division with a satisfactory building from the operating standpoint.

Of course, all elevators, stairways and other vertical openings must be thoroughly and properly protected, but we cannot advise the use of automatically closing doors for elevators. Such an arrangement inevitably leads to a permanent fastening which spoils the automatic feature.

For protection against fire within the building we must especially guard against the well-known characteristics of gasoline vapor to flow to the lowest point it can reach, exactly as water does, and to take fire if given the slightest contact with flame, spark or metal heated to redness or above. It is futile to imagine that we can have a garage for gasoline cars without often having gasoline vapor present. The experience of everyone who has had to do with cars using gasoline shows that such cars are at any time liable to gasoline leaks; carbureters "flood" and gasoline vapor is forced out of the tank on a car whenever it is refilled. It is a melancholy fact that gasoline is often used to clean gears and other oily parts in spite of the most stringent rules and the evident danger of such a practice. We must, therefore, arrange the building so that this vapor will have little opportunity to collect where fire, spark or hot metal can reach it. Low places, such as pits, in which the gasoline vapor can collect must be avoided. If they are necessary, they must be provided with proper ventilation, and any work which combines an unventilated pit and a source of fire, like a red-hot rivet, should never be permitted.

There is a serious hazard to life as well as to property in these pits, for gasoline vapor has a most dangerous property of producing anaesthesia in animals, including men, so that a man working in a pit which is gradually filling with gasoline vapor may be overcome by this vapor and unless immediately removed will lose his life.

The section of the garage used for repair work should be well separated from the rest of the building, for in this section the use of flame and hot metal is practically imperative. We should also take every precaution to make it unnecessary and inconvenient to have any gasoline in this part of the building. If such work can be done in the highest part of the building it will manifestly reduce the danger from gasoline vapor, which, as we have noted before, always tends to flow downward.

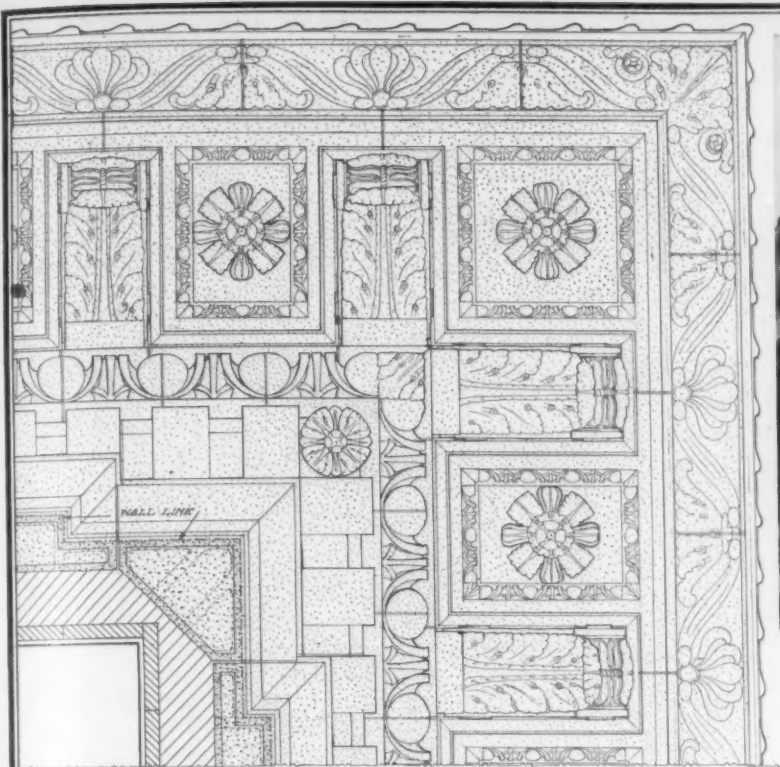
All heating should be done by steam or hot water and the room in which the boiler or heater is located should have no entrance except from the outside. All lighting should be done by incandescent electric lights placed at least five feet from the floor, except that in large rooms the mercury vapor lamp of the Cooper-Hewitt type is often available without danger, if located close to the top of the room. Where it is necessary to use portable lights the cord carrying the current should be of the very best type and each lamp should be equipped with a strong and effective guard.

Where electric motors, which are often used for power in garages, cannot be placed high enough above the floor to be certainly above the line of gasoline vapor, they should be of the enclosed type with all ventilating ducts or openings protected with wire gauze. All other electrical devices such as switches, "charging sets," and the like, capable of producing sparks, should be placed in rooms in which no gasoline is allowed.

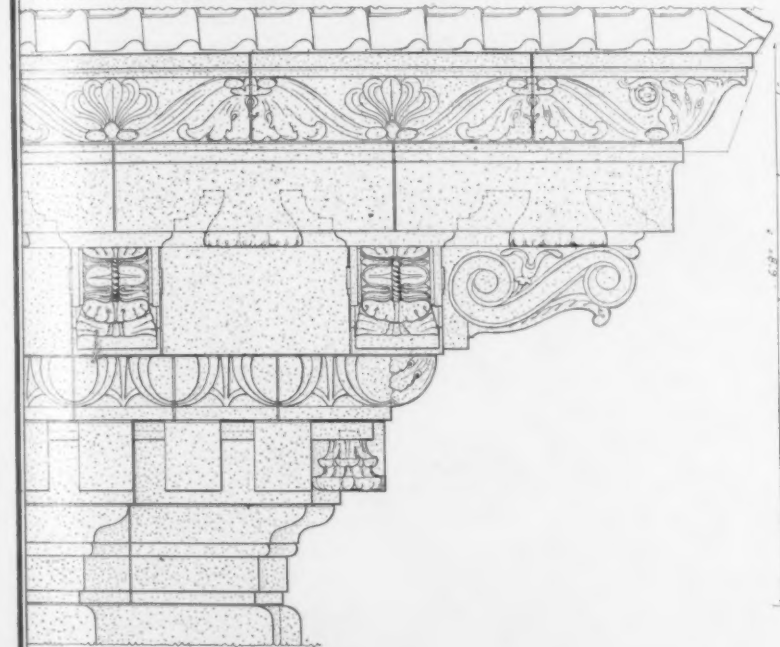
Although the practice is comparatively new the writer is convinced that it is worth while to install automatic sprinklers in every part of public garages. While it is true that water thrown directly upon burning gasoline may spread the fire, the effect of water thrown in fine drops and covering completely a circle having a radius of six to ten feet is such that it will prevent the spread of fire better than any other form of fire extinguishing device now known. The automatic sprinkler when provided with a first rate water supply does this without the assistance of man.

In concluding, we would again briefly urge the necessity of so arranging the building that it will be convenient for use. The writer has again and again seen buildings in which this has been neglected and in which the misuse of the building had left less fire protection than if part of the money spent for putting it in had been saved for other purposes.

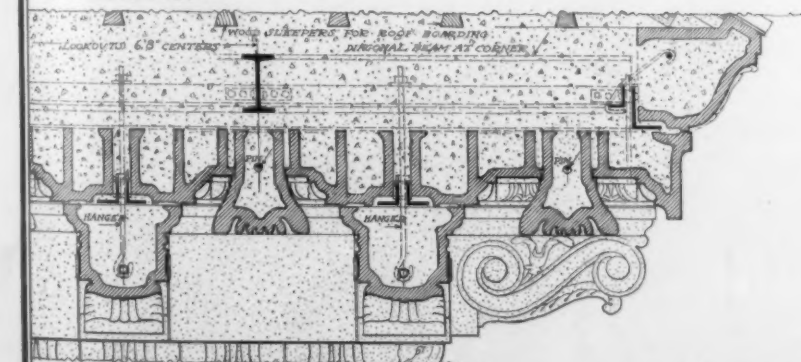
TERRA COTTA CONSTRUCTION DETAILS



PLAN OF CORNICE "AT A" LOOKING VP



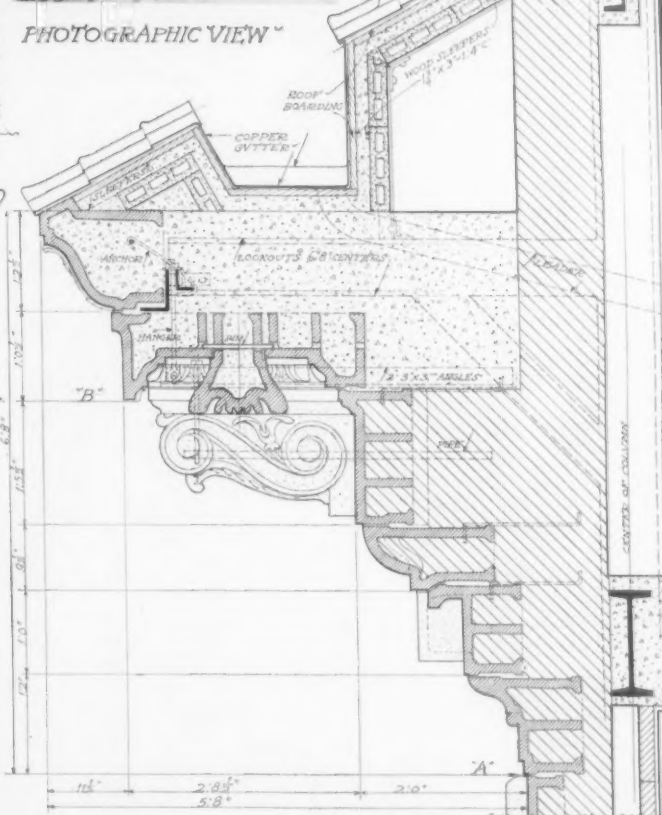
ELEVATION



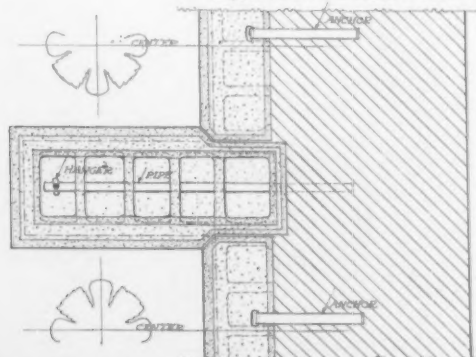
SECTION THRO' MODILLIONS AND SOFFIT



PHOTOGRAPHIC VIEW



SECTION THRO' CORNICE

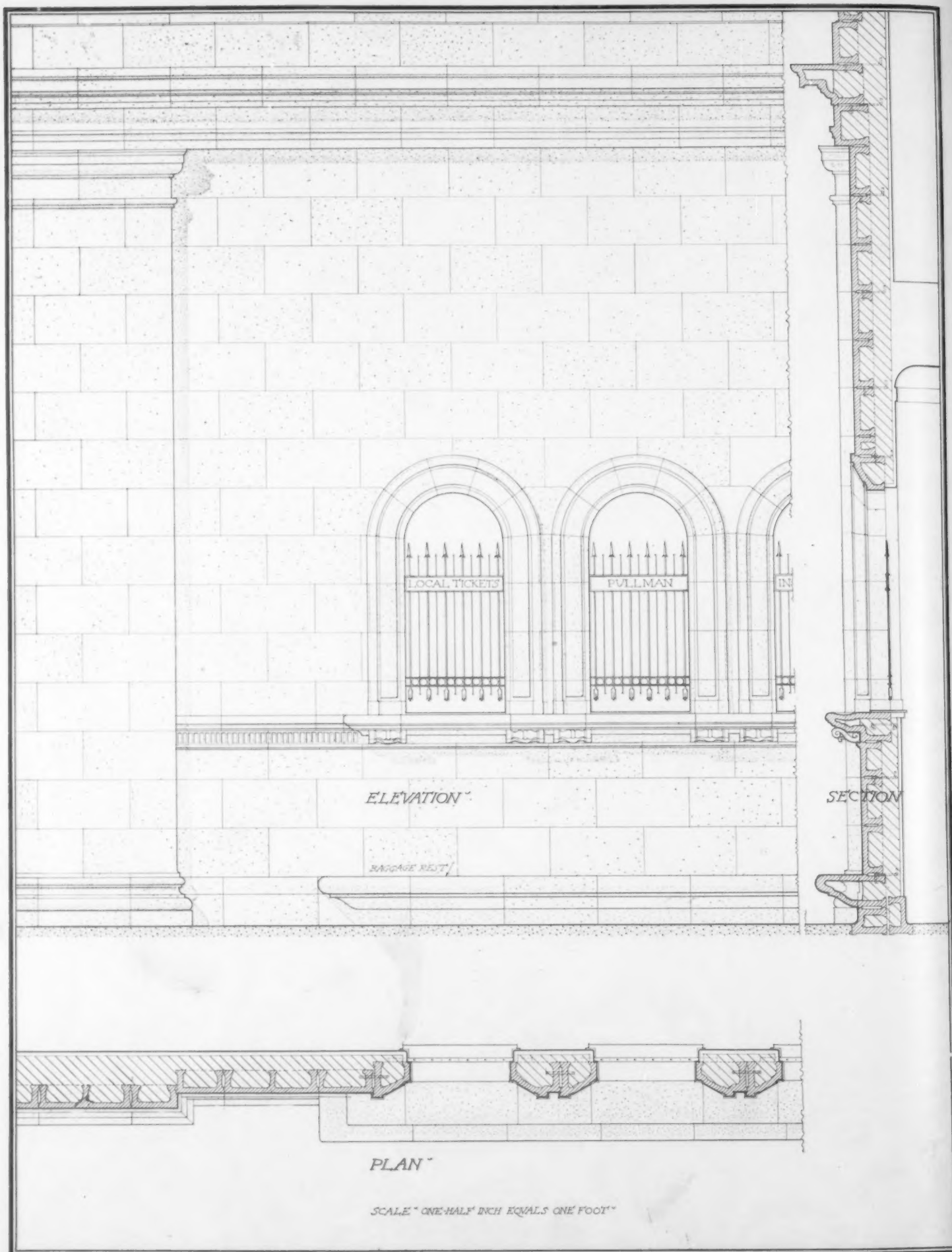


PLAN TOP BED OF MODILLIONS

SCALE ONE-HALF INCH EQUALS ONE FOOT

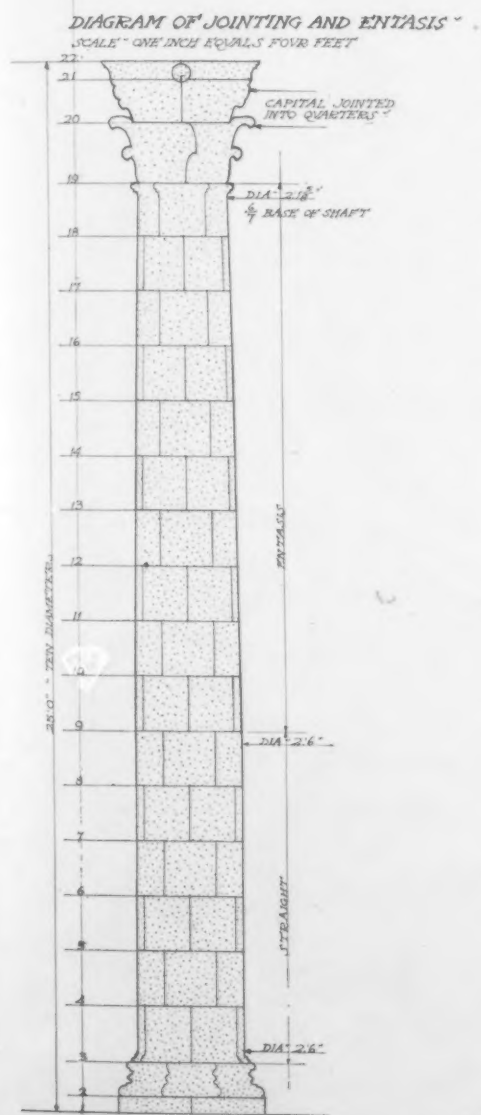
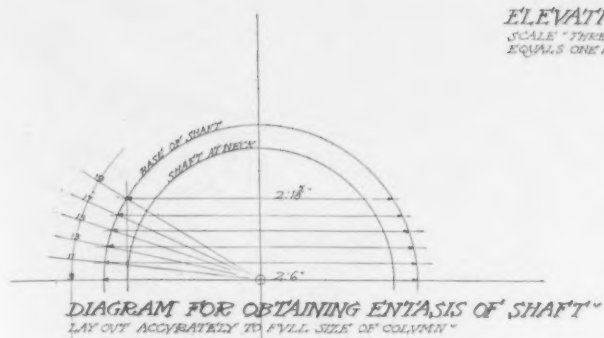
TERRA COTTA CONSTRUCTION OF CORNICE.

Work executed by New York Architectural Terra Cotta Company, New York, N. Y.



TERRA COTTA CONSTRUCTION OF A PASSENGER STATION INTERIOR.
Work executed by The New Jersey Terra Cotta Company, New York, N. Y.

TERRA COTTA CONSTRUCTION DETAILS



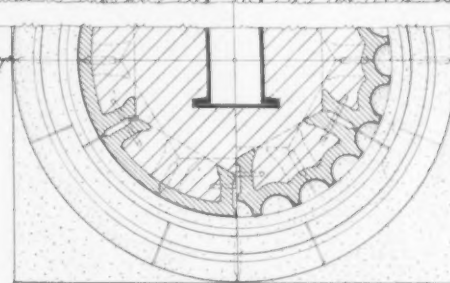
ELEVATION OF CAPITAL"
SCALE "THREE-QUARTERS OF AN INCH"
EQUALS ONE FOOT"



PLAN THEO' NECK OF SHAFT"
LOOKING UP"

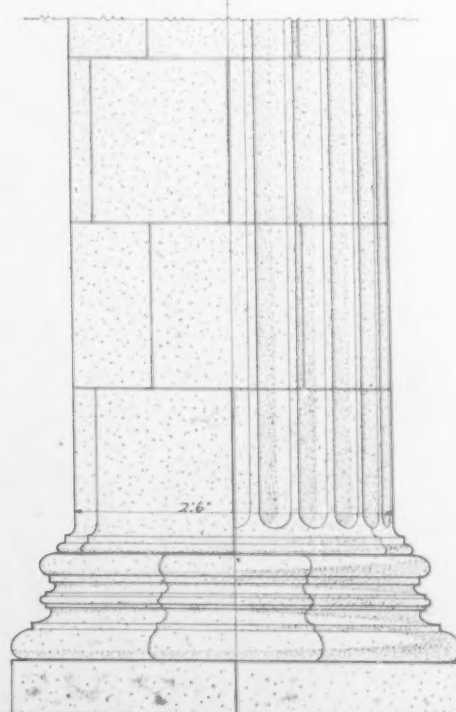


PLAN THEO' BASE OF SHAFT"
LOOKING DOWN"

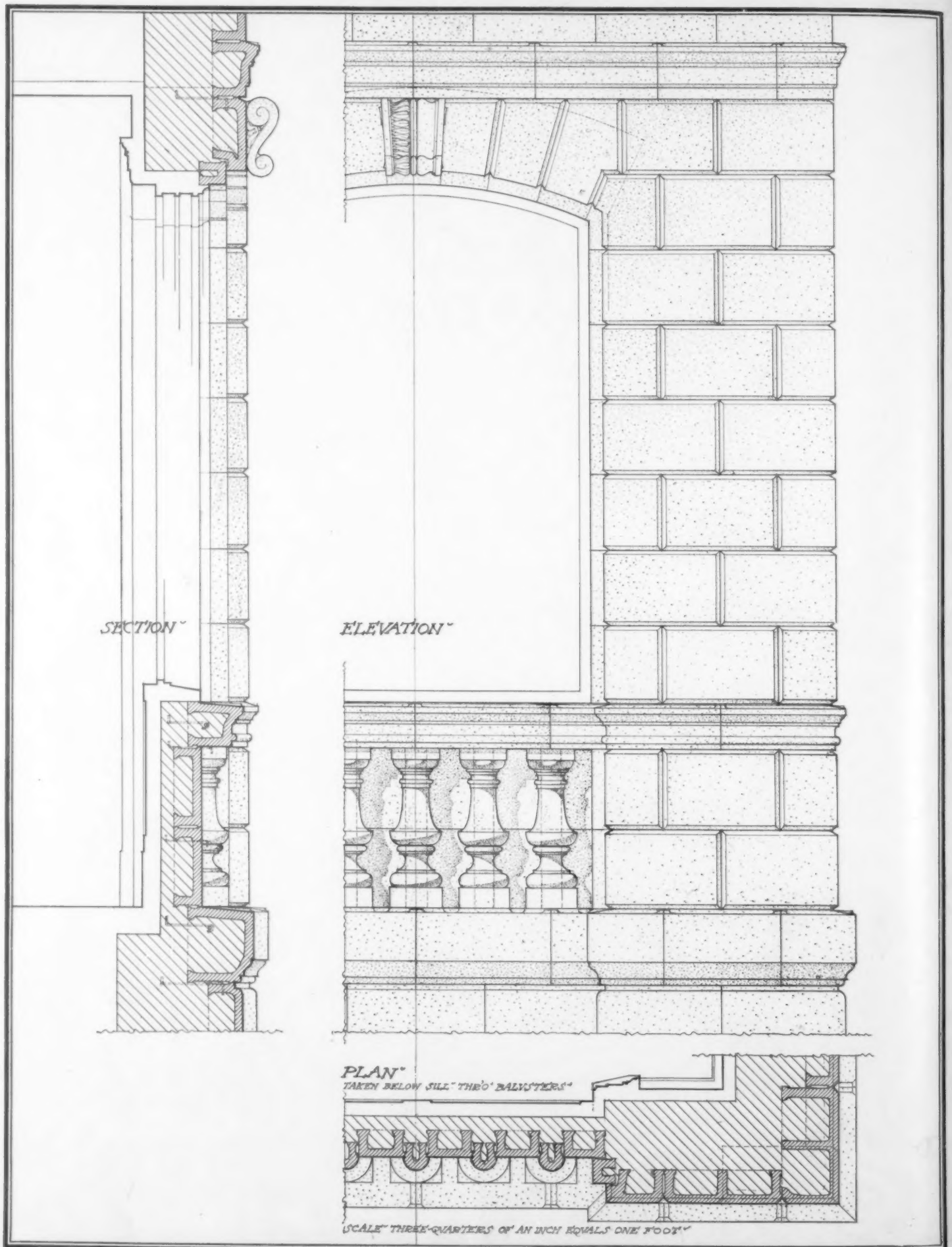


CORINTHIAN
ORDER"

ELEVATION OF BASE"
SCALE "THREE-QUARTERS OF AN INCH"
EQUALS ONE FOOT"

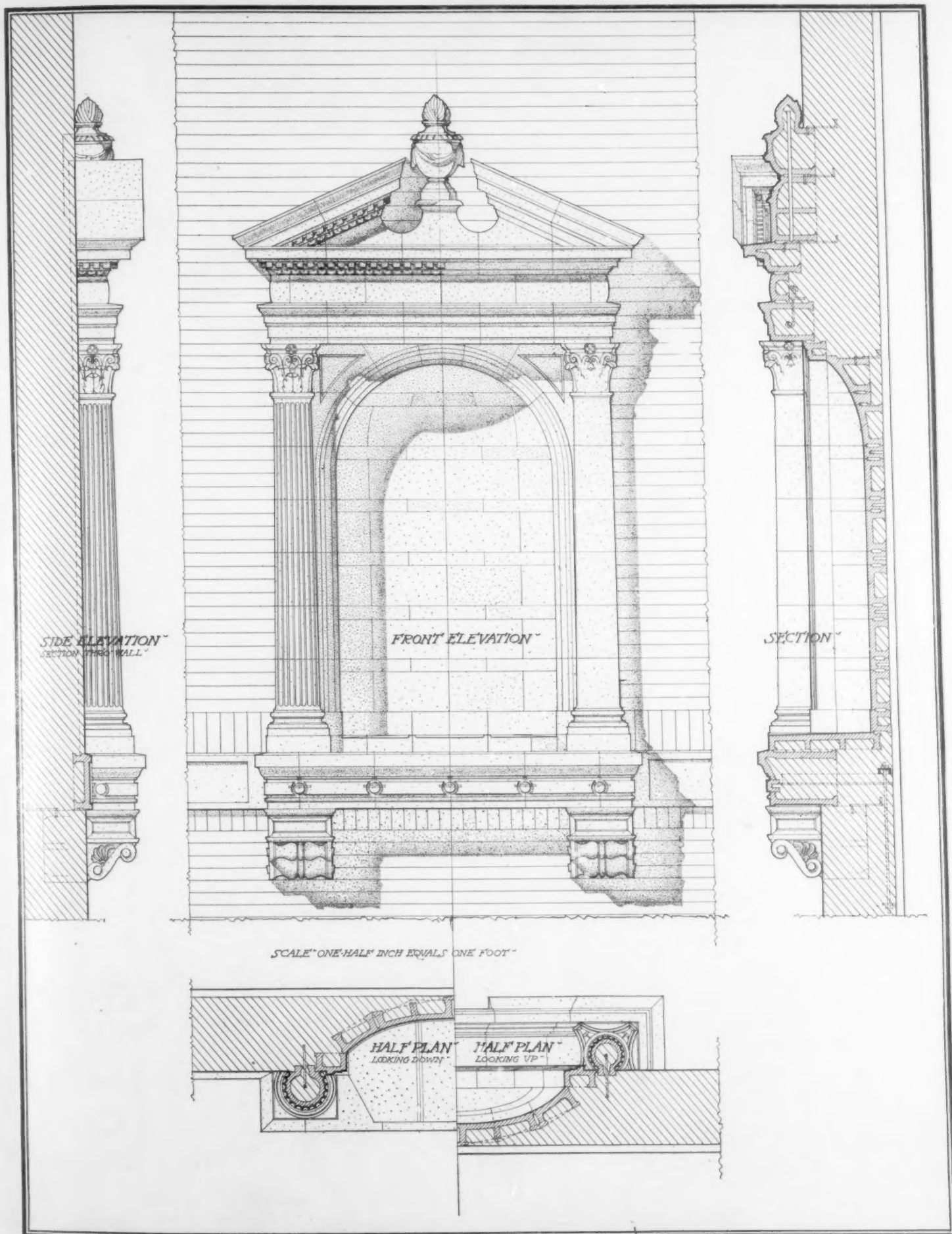


TERRA COTTA CONSTRUCTION OF LARGE CORINTHIAN COLUMN.
Work executed by Conkling-Armstrong Terra Cotta Company, Philadelphia, Pa.

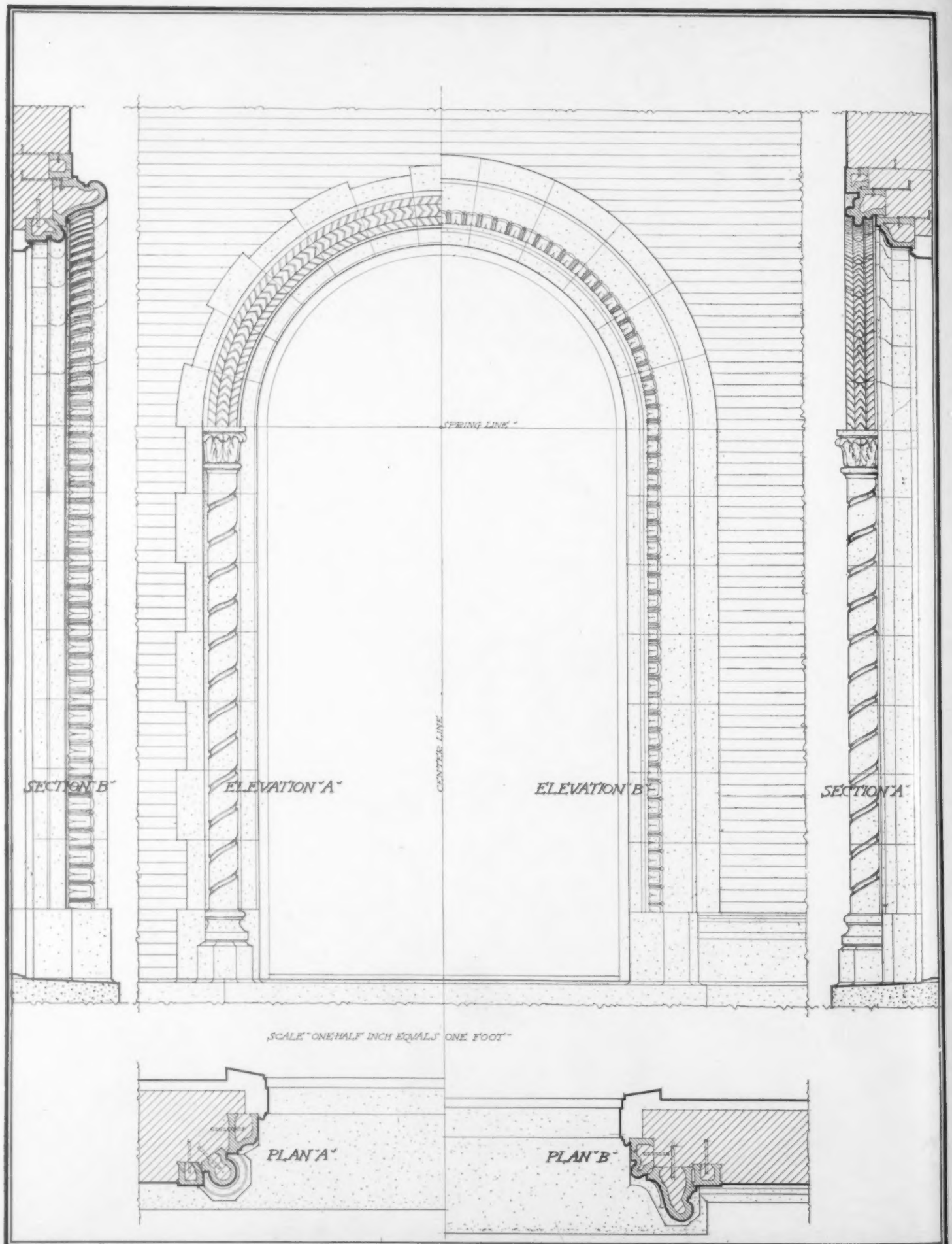


TERRA COTTA CONSTRUCTION OF PIER AND BALUSTRADE.
Work executed by O. W. Ketcham Terra Cotta Works, Philadelphia, Pa.

TERRA COTTA CONSTRUCTION DETAILS

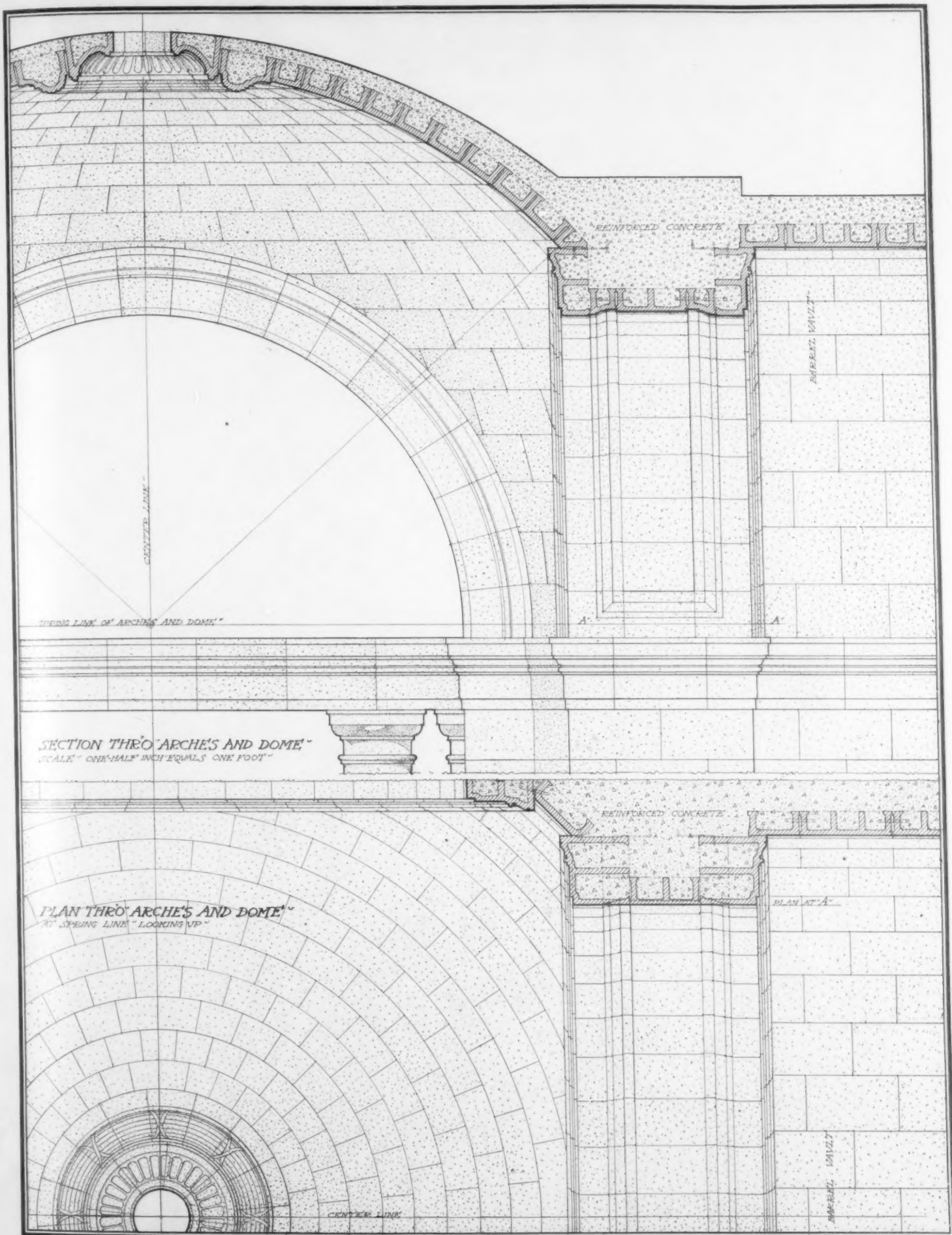


TERRA COTTA CONSTRUCTION OF A NICHE.
Work executed by The South Amboy Terra Cotta Company, New York.

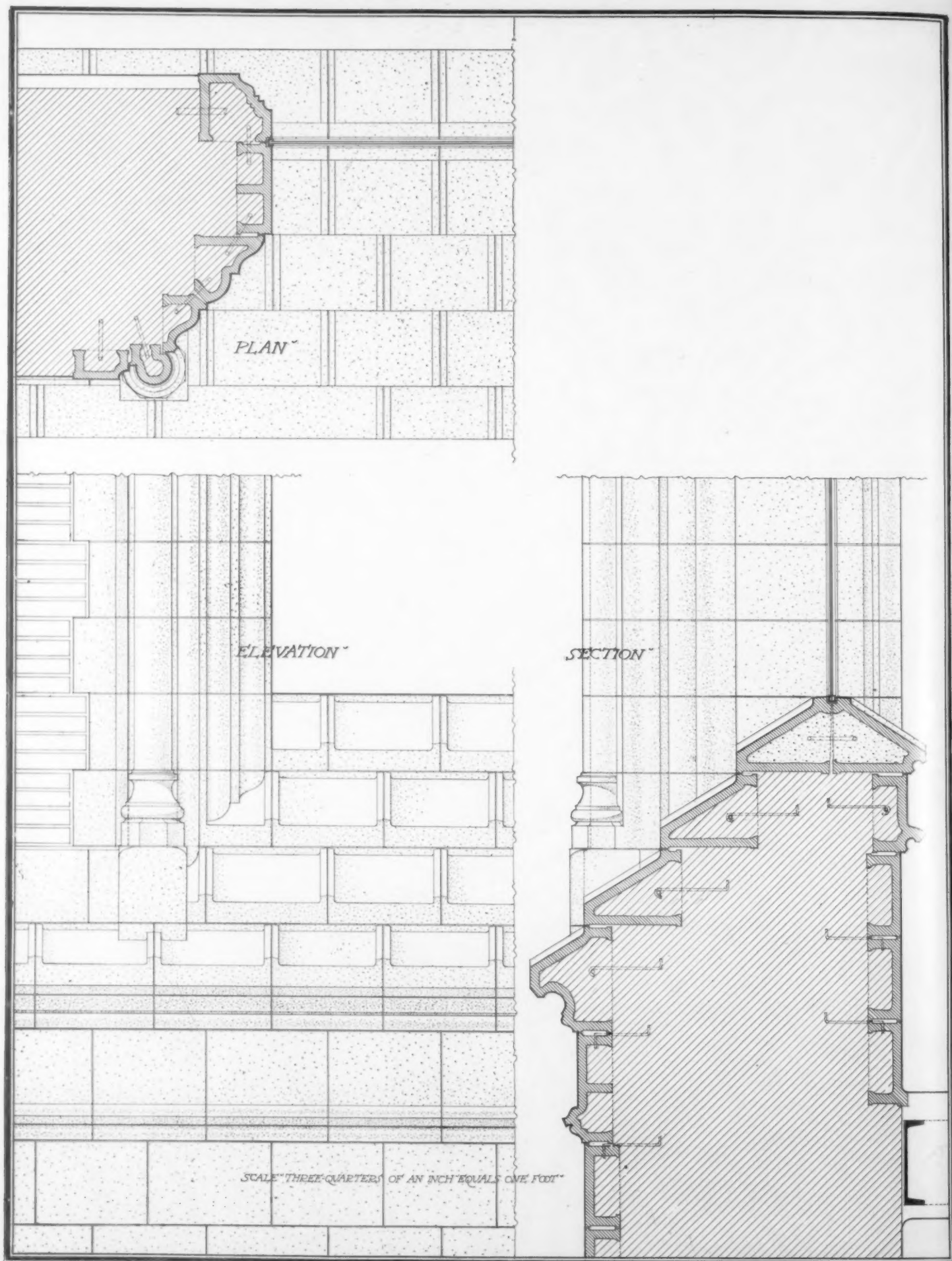


TERRA COTTA CONSTRUCTION OF ARCHED DOOR OPENING.
Work executed by N. Clark & Sons, San Francisco, Cal.

TERRA COTTA CONSTRUCTION DETAILS

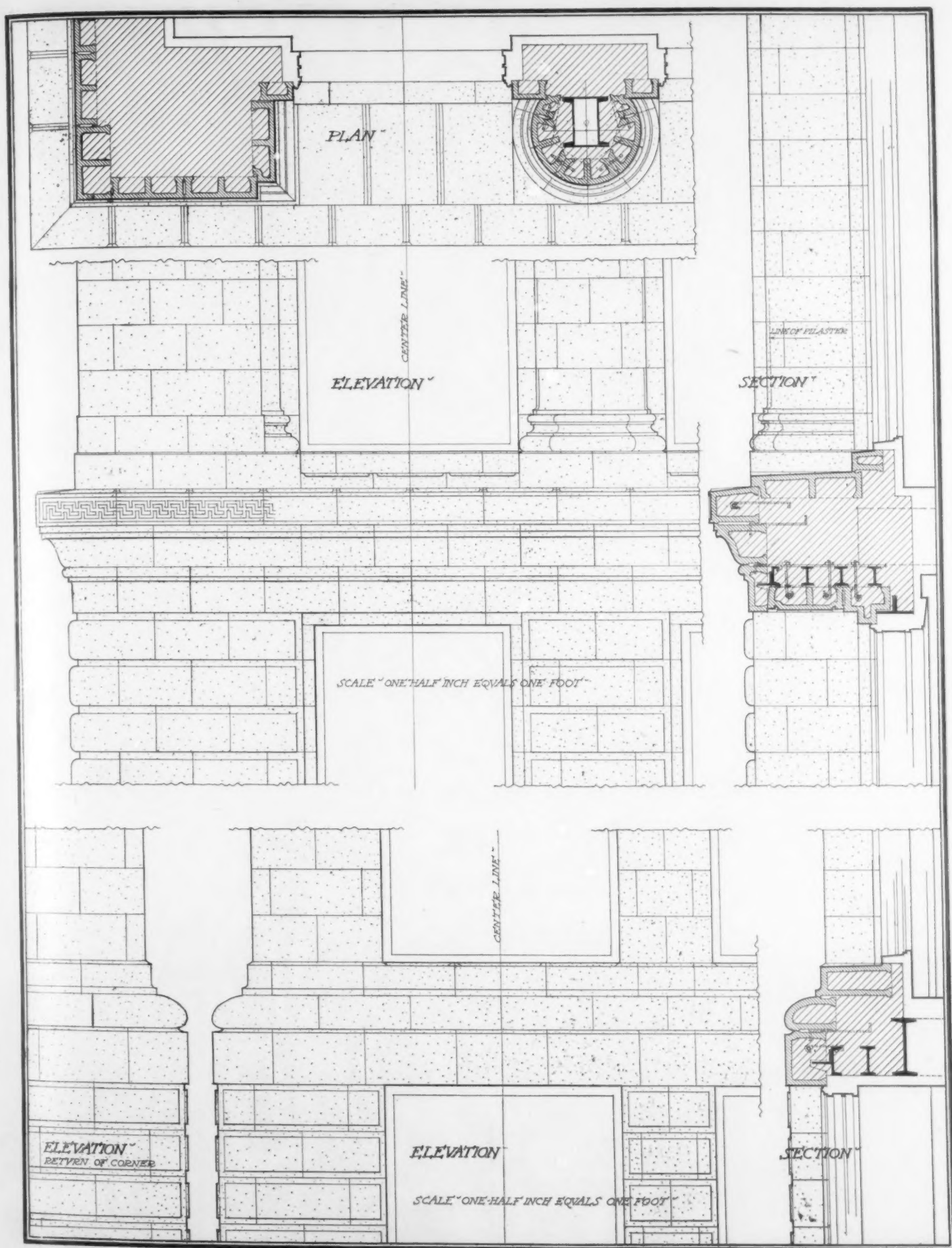


TERRA COTTA CONSTRUCTION OF A DOME AND PIERS.
Work executed by Federal Terra Cotta Company, New York.



TERRA COTTA CONSTRUCTION OF THE LOWER PART OF A TOWER WINDOW.
Work executed by Maryland Terra Cotta Company, Baltimore, Md.

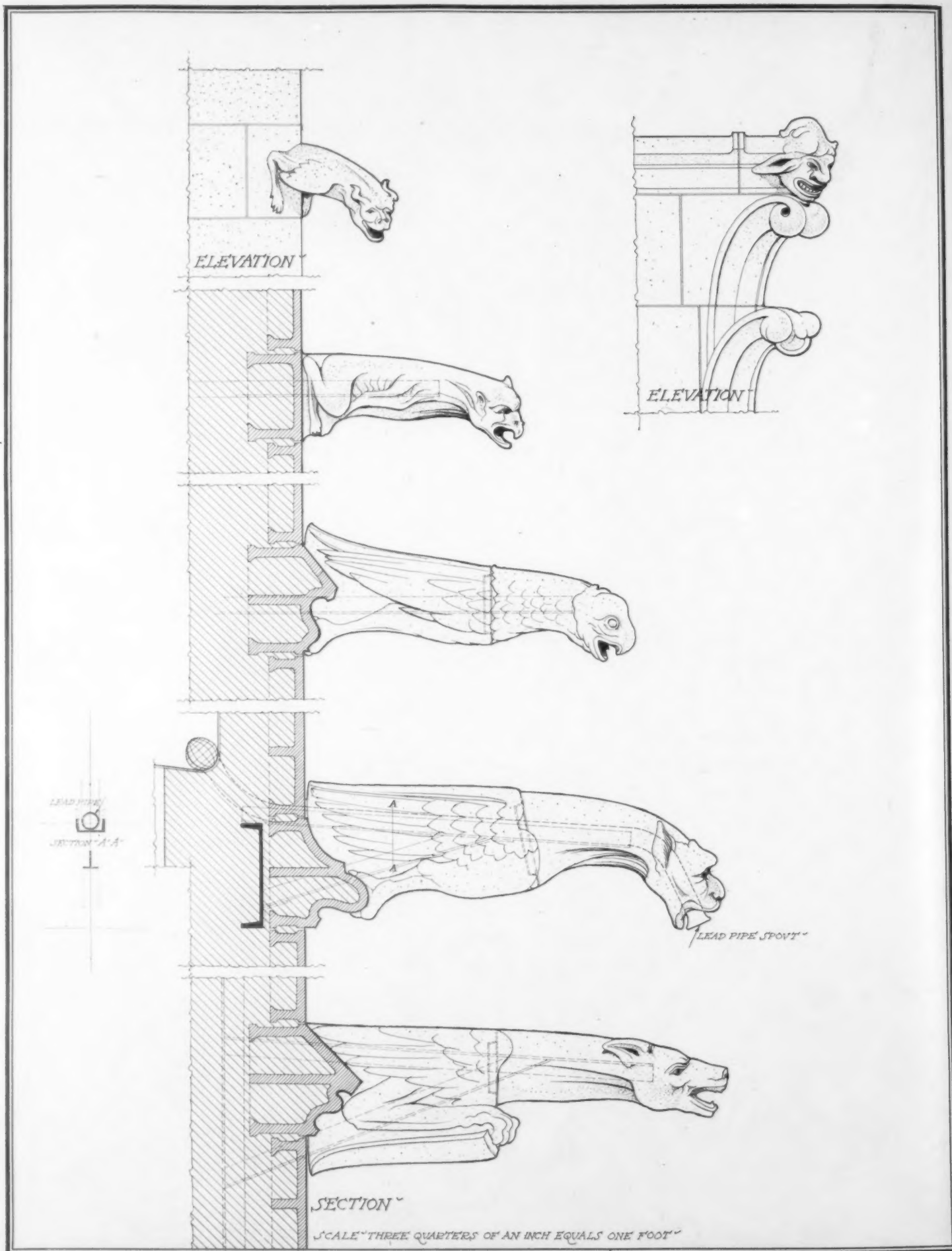
TERRA COTTA CONSTRUCTION DETAILS



TERRA COTTA CONSTRUCTION OF A GENERAL WINDOW AND PIER TREATMENT.

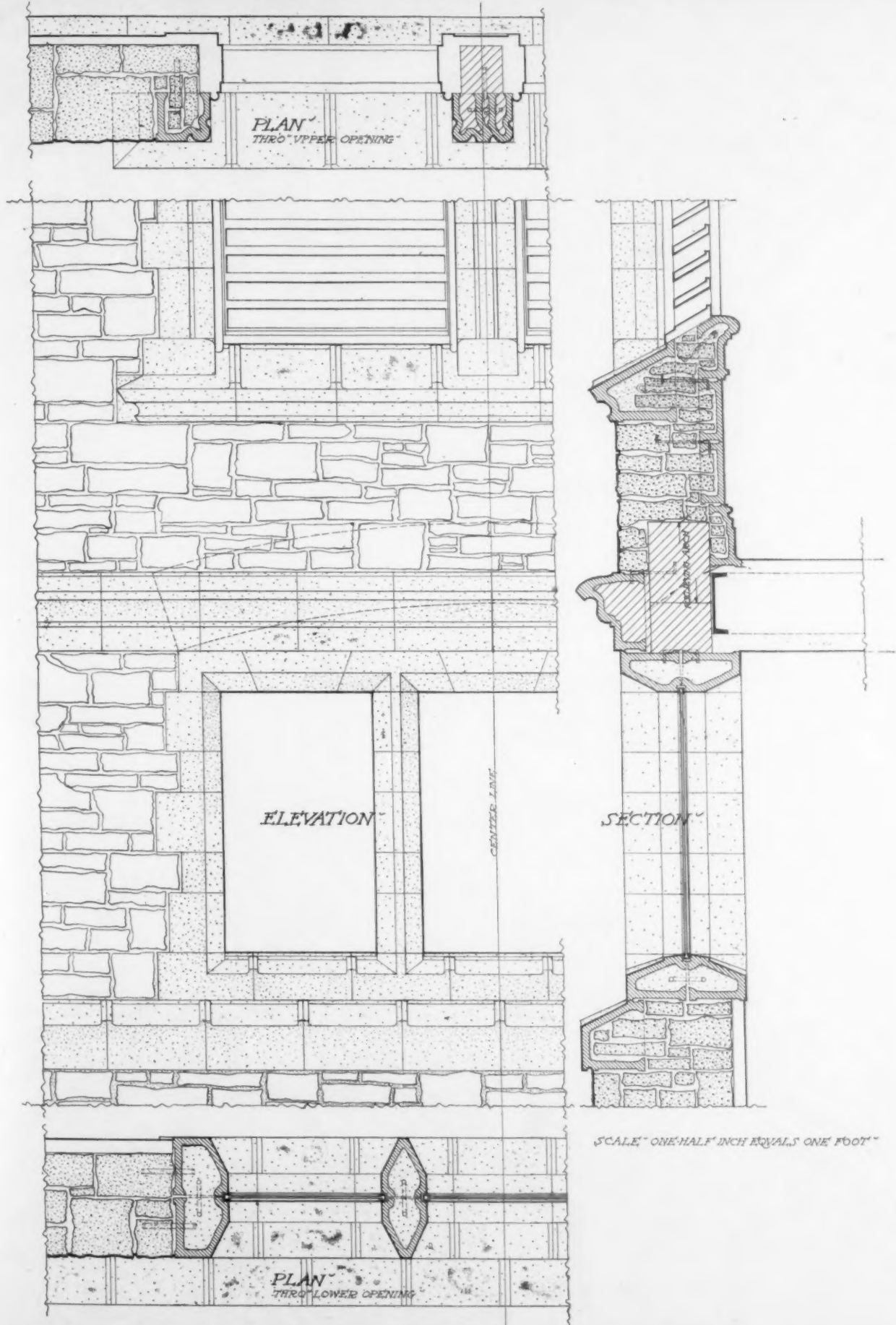
Work executed by the Washington Brick, Lime & Sewer Pipe Company, Spokane, Wash.

THE BRICKBUILDER

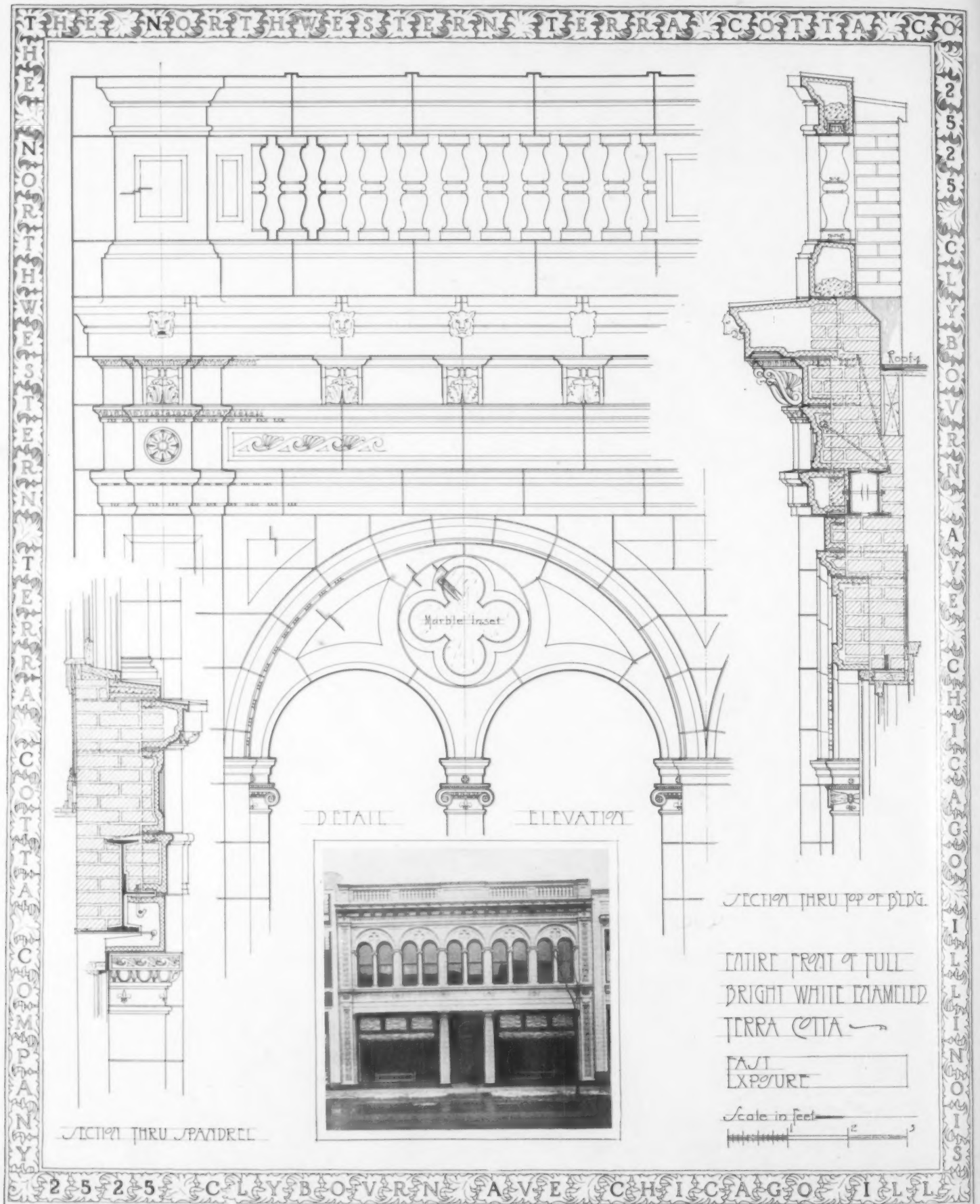


TERRA COTTA CONSTRUCTION OF GARGOYLES.
Work executed by Brick, Terra Cotta & Tile Co., Corning, N. Y.

TERRA COTTA CONSTRUCTION DETAILS

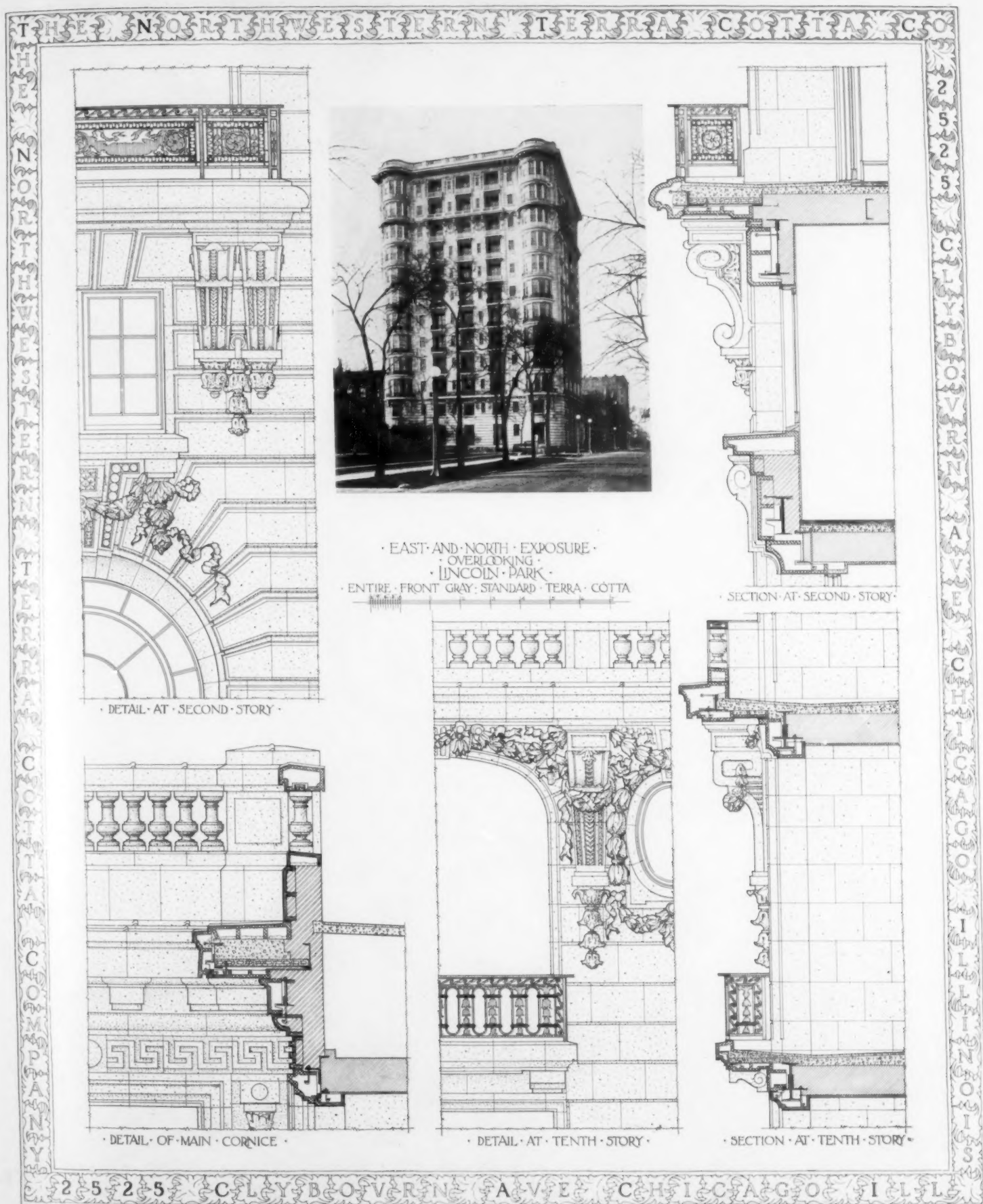


TERRA COTTA CONSTRUCTION OF MULLIONED AND LOUVRE TOWER WINDOWS.
Work executed by Northern Clay Company, Auburn, Washington.



TERRA COTTA DETAILS—ANDERSON GARAGE, CHICAGO, ILL.
 Jenney, Mundie and Jensen, Architects.
 Work executed by The Northwestern Terra Cotta Company, Chicago, Ill.

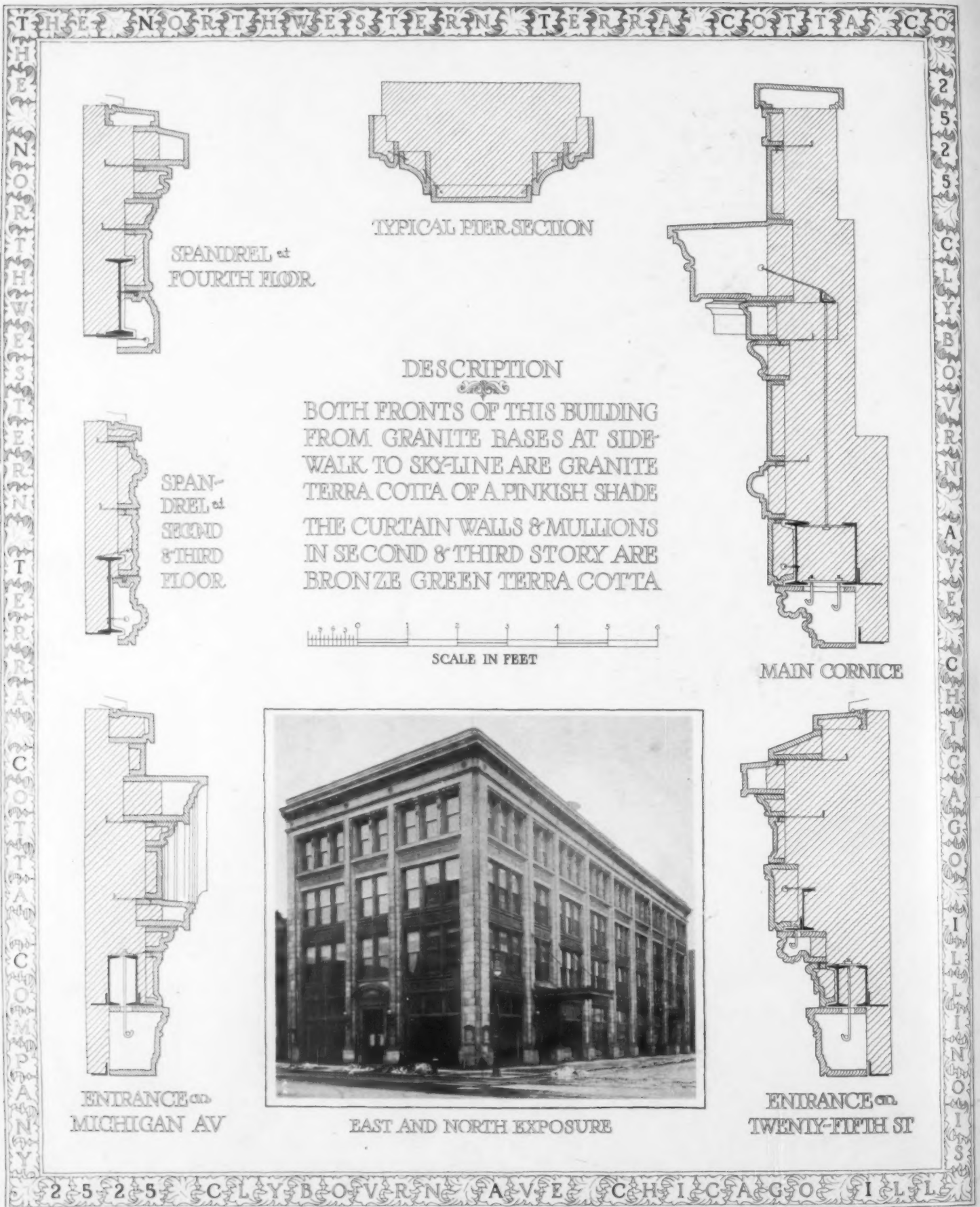
TERRA COTTA CONSTRUCTION DETAILS



TERRA COTTA DETAILS — MARSHALL APARTMENT BUILDING, CHICAGO, ILL.

Marshall & Fox, Architects.

Work executed by The Northwestern Terra Cotta Company, Chicago, Ill.



TERRA COTTA DETAILS—TENNANT MOTOR BUILDING, CHICAGO, ILL.

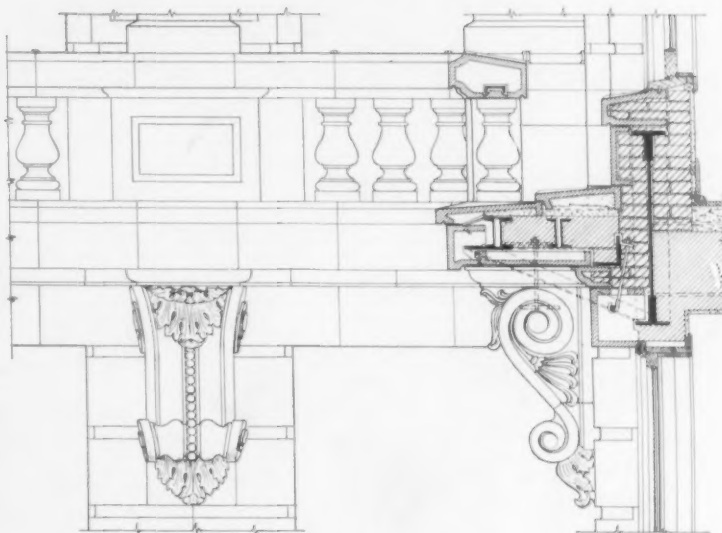
Jenney, Mundie and Jensen, Architects.

Work executed by The Northwestern Terra Cotta Company, Chicago, Ill.

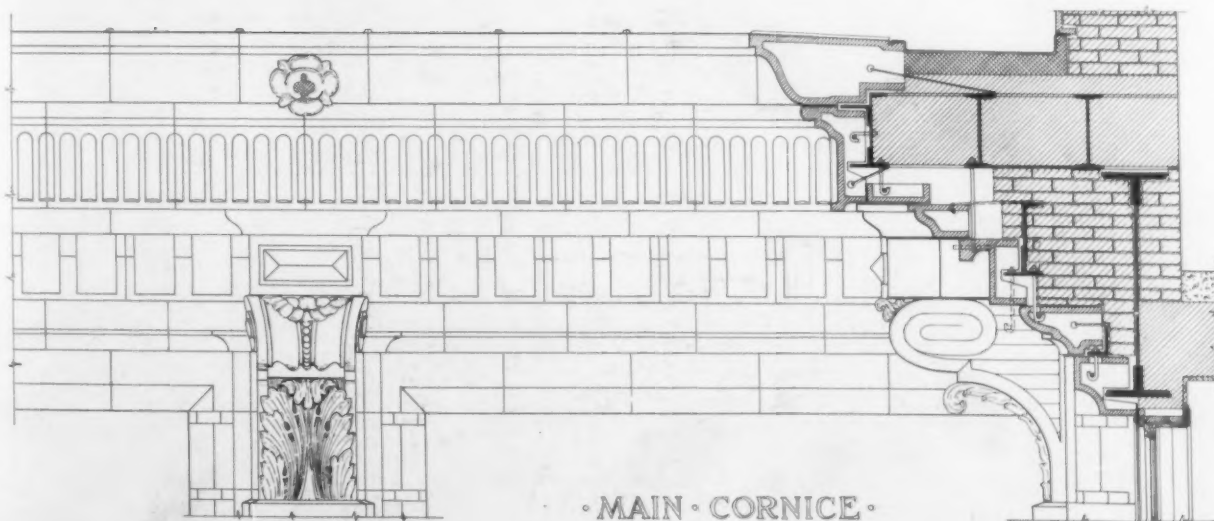
TERRA COTTA CONSTRUCTION DETAILS



- ENTIRE FRONT FROM SIDEWALK TO SKY-LINE IS ARCHITECTURAL TERRA COTTA EXCEPTING ONLY THE GRANITE PIERS IN LOWER STORIES •
- TERRA COTTA IN LOWER THREE STORIES IS ALL PURE GOLD ENAMEL SURFACE. THIS FIRE GILDING IS MATT WITH THE HIGH LIGHTS HAND POLISHED •
- TERRA COTTA FROM 3RD STORY UP IS A CREAM DULL ENAMEL WITH INCONSPICUOUS GREEN SPOTS •
- SOUTH AND WEST EXPOSURE •



• BALCONY • AT • 16TH • FLOOR •



• MAIN • CORNICE •

SCALE 1" = 1' IN FEET.

TERRA COTTA DETAILS—NEW LYTTON BUILDING, CHICAGO, ILL.

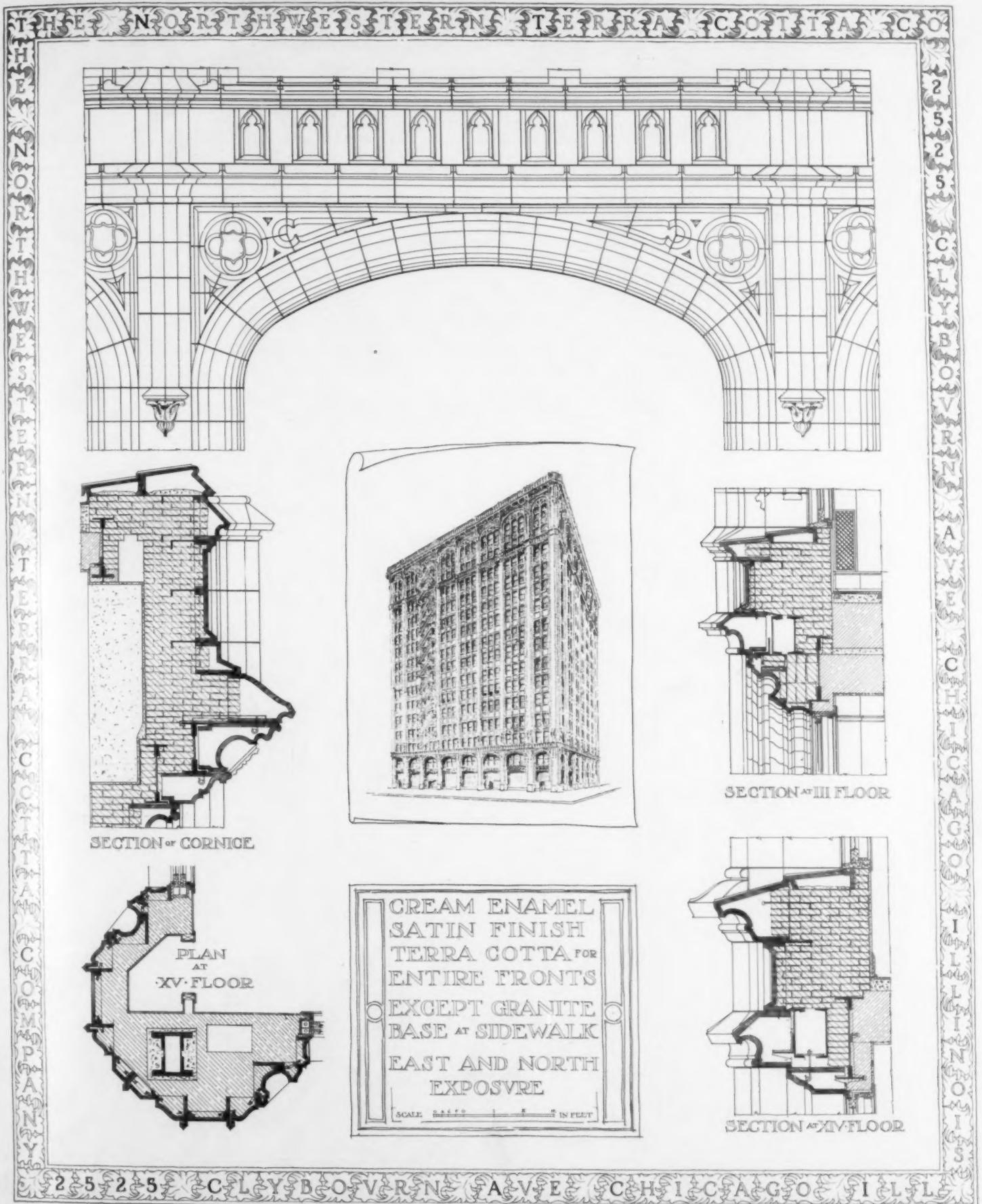
Marshall & Fox, Architects.

Work executed by The Northwestern Terra Cotta Company, Chicago, Ill.

Darling & Pearson, Architects.

56

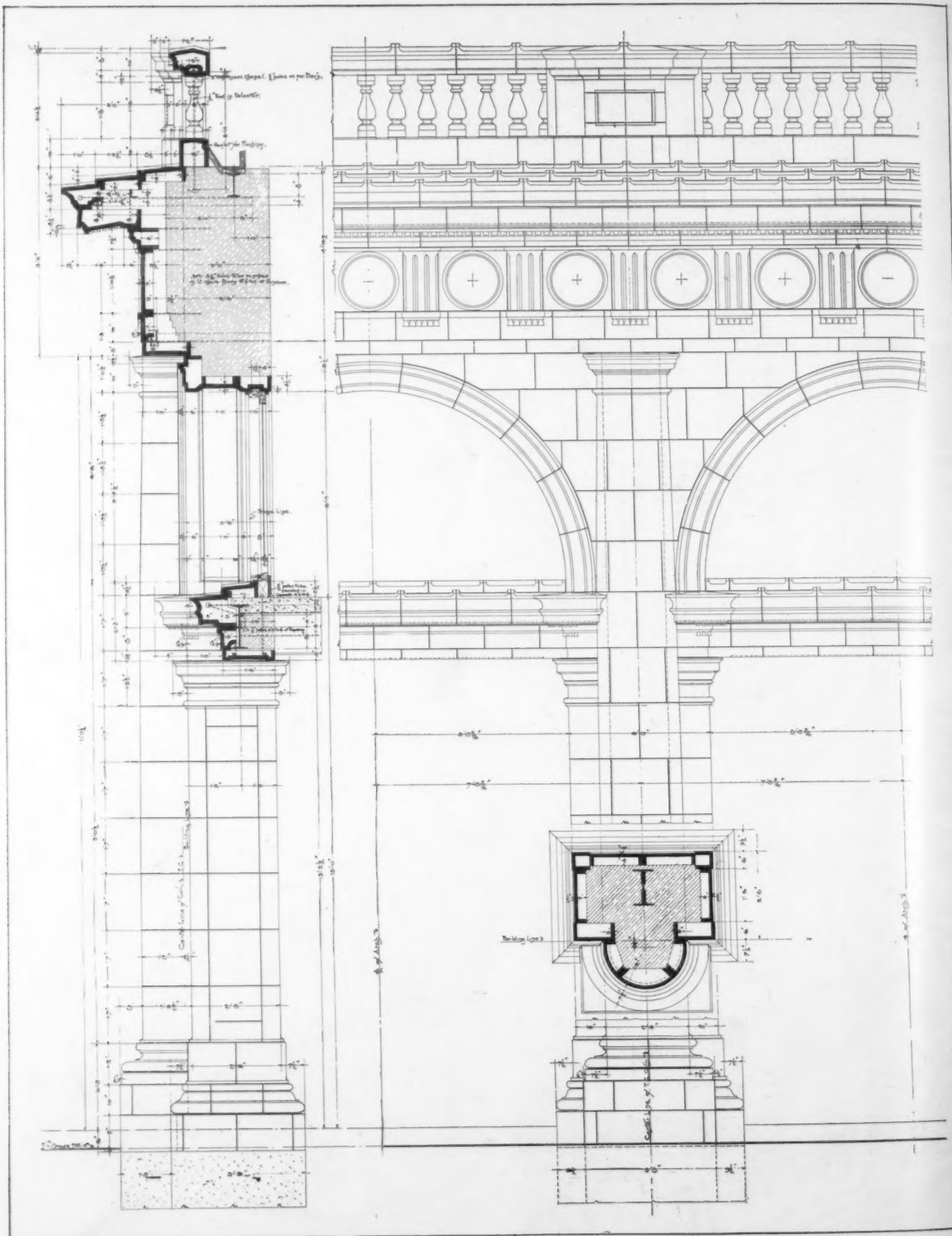
TERRA COTTA CONSTRUCTION DETAILS



TERRA COTTA DETAILS—THE BURLINGTON BUILDING, CHICAGO, ILL.

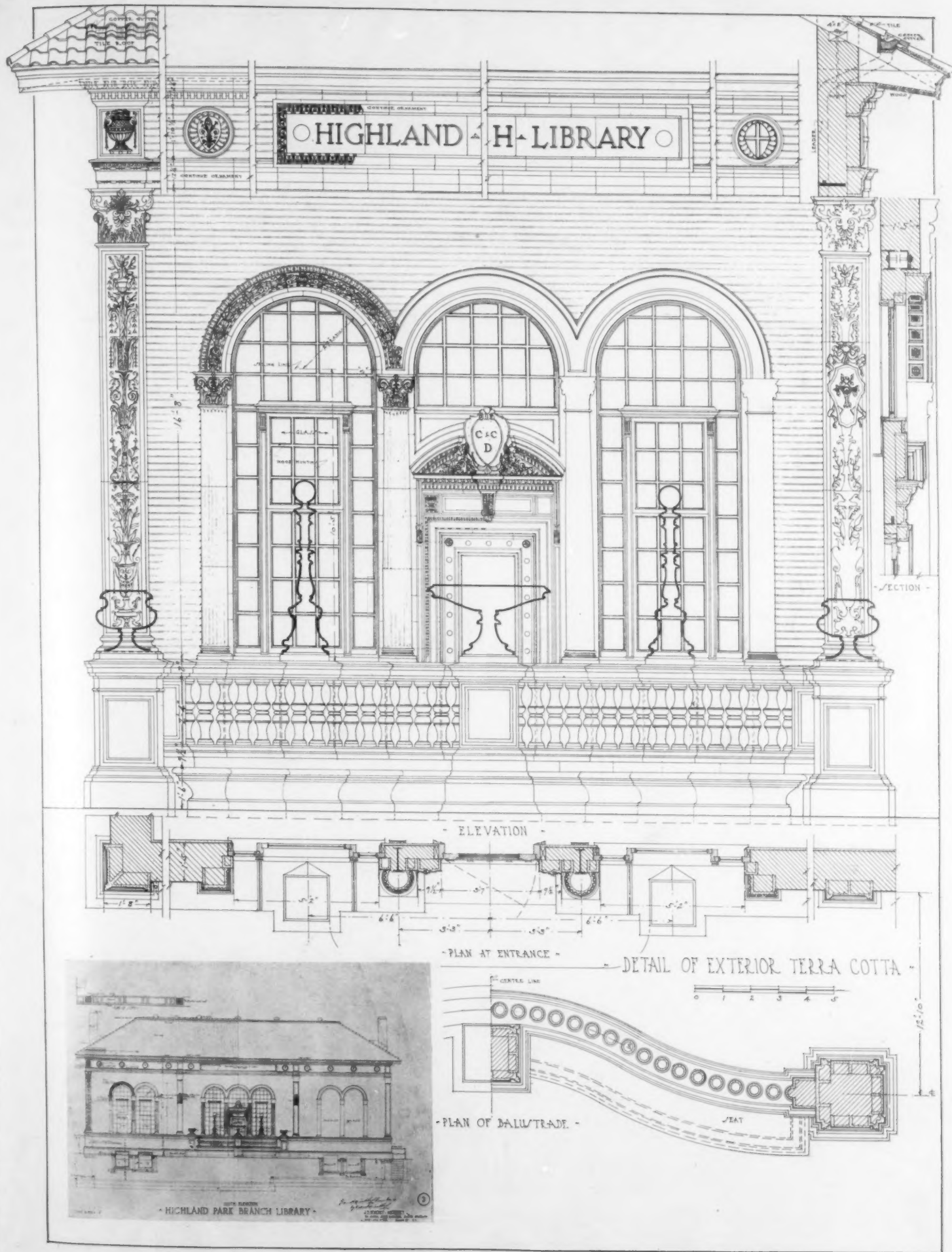
Marshall & Fox, Architects.

Work executed by The Northwestern Terra Cotta Company, Chicago, Ill.



TERRA COTTA CONSTRUCTION OF CORNICE, WINDOWS AND PIERS.
Work executed by The American Terra Cotta & Ceramic Company, Chicago, Ill.

TERRA COTTA CONSTRUCTION DETAILS



DETAILS OF TERRA COTTA DESIGN AND CONSTRUCTION.

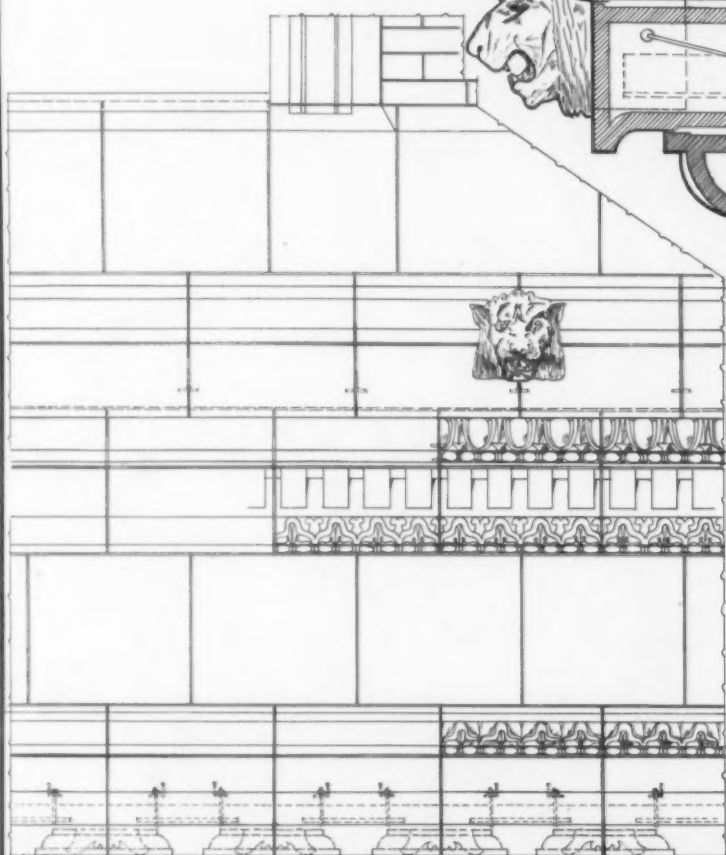
For Highland Park Branch Denver Public Library, Denver, Colorado. J. B. Benedict, Architect.
Work executed by The Denver Terra Cotta Co., Denver, Colo.

CORNICE CONSTRUCTION SHOWING METHODS OF SUPPORTING HANGING & ANCHORING

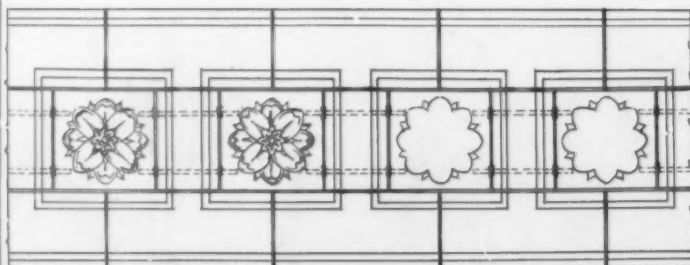
SCALE FOR SECTION
12 9 6 3 0 1 2 3 4 Ft

SCALE FOR PLAN & ELEVATION

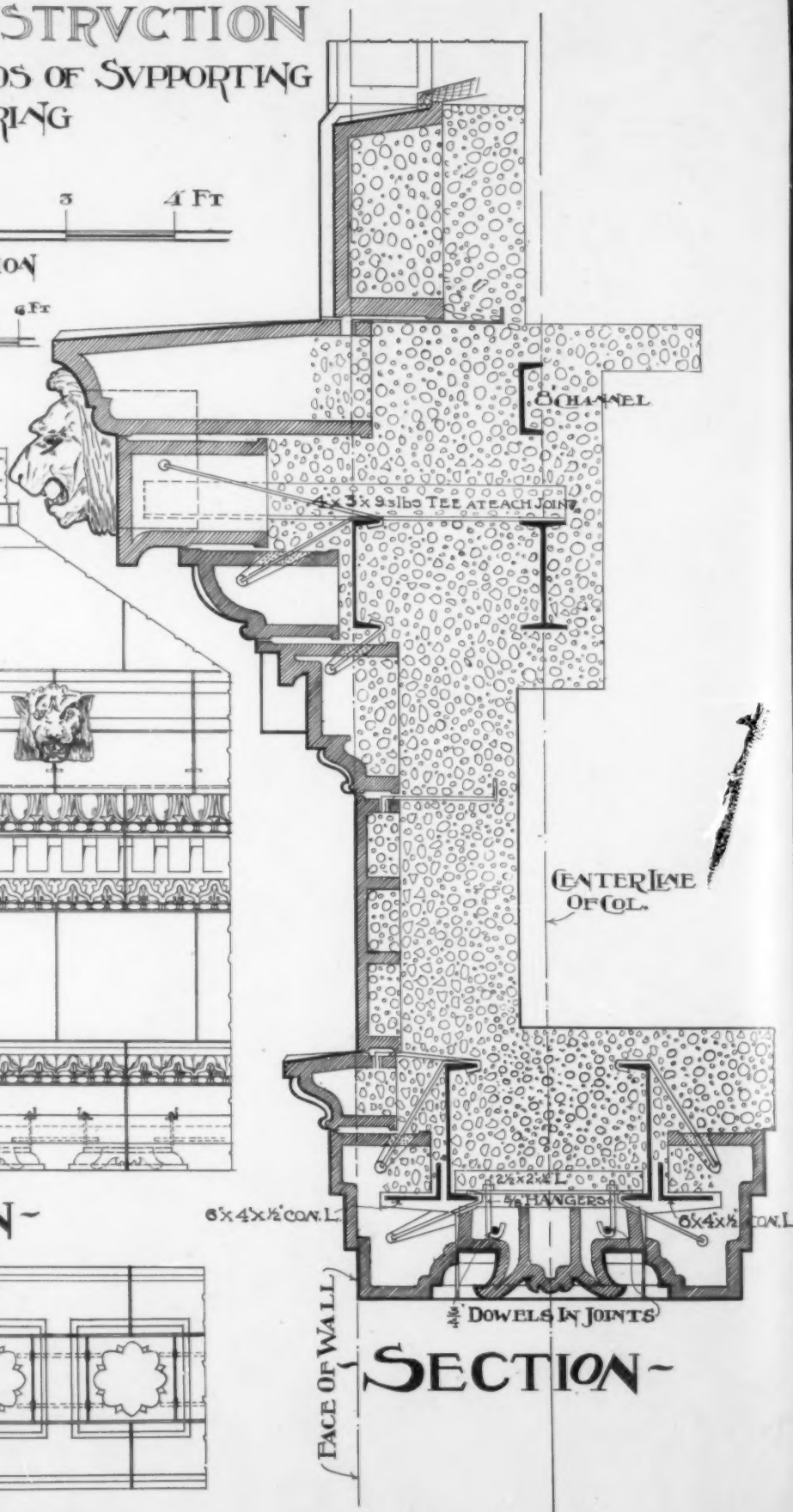
12 6 0 1 2 3 4 5 6 Ft



-ELEVATION-



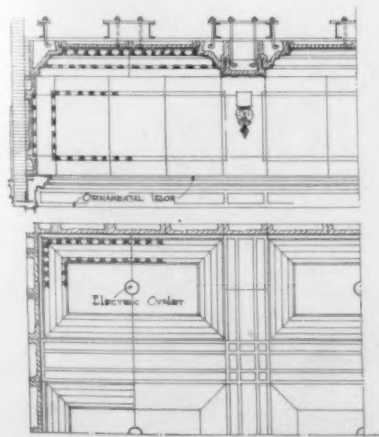
-SOFFIT PLAN-



TERRA COTTA CONSTRUCTION OF CORNICE.

Work executed by Gladding, McBean and Company, San Francisco, Cal.

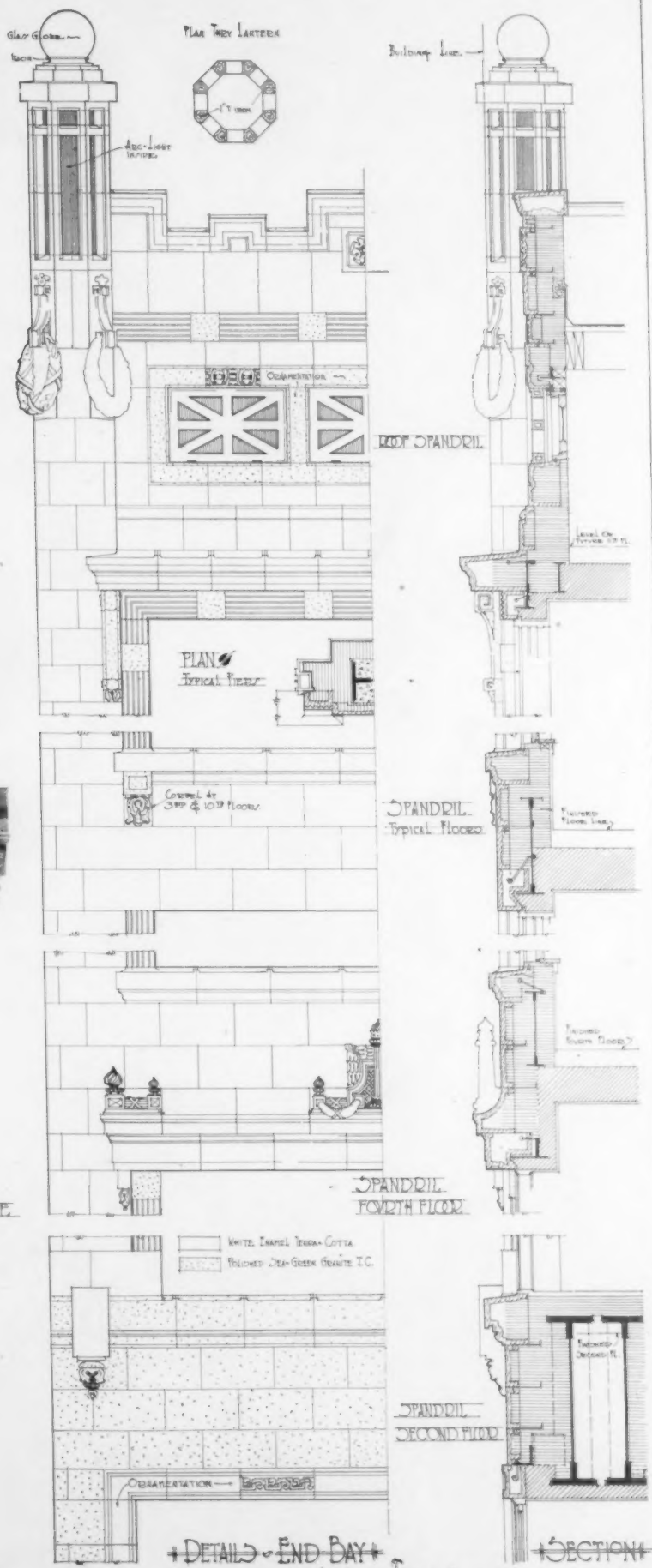
TERRA COTTA CONSTRUCTION DETAILS



DETAIL MAIN ENTRANCE CORRIDOR

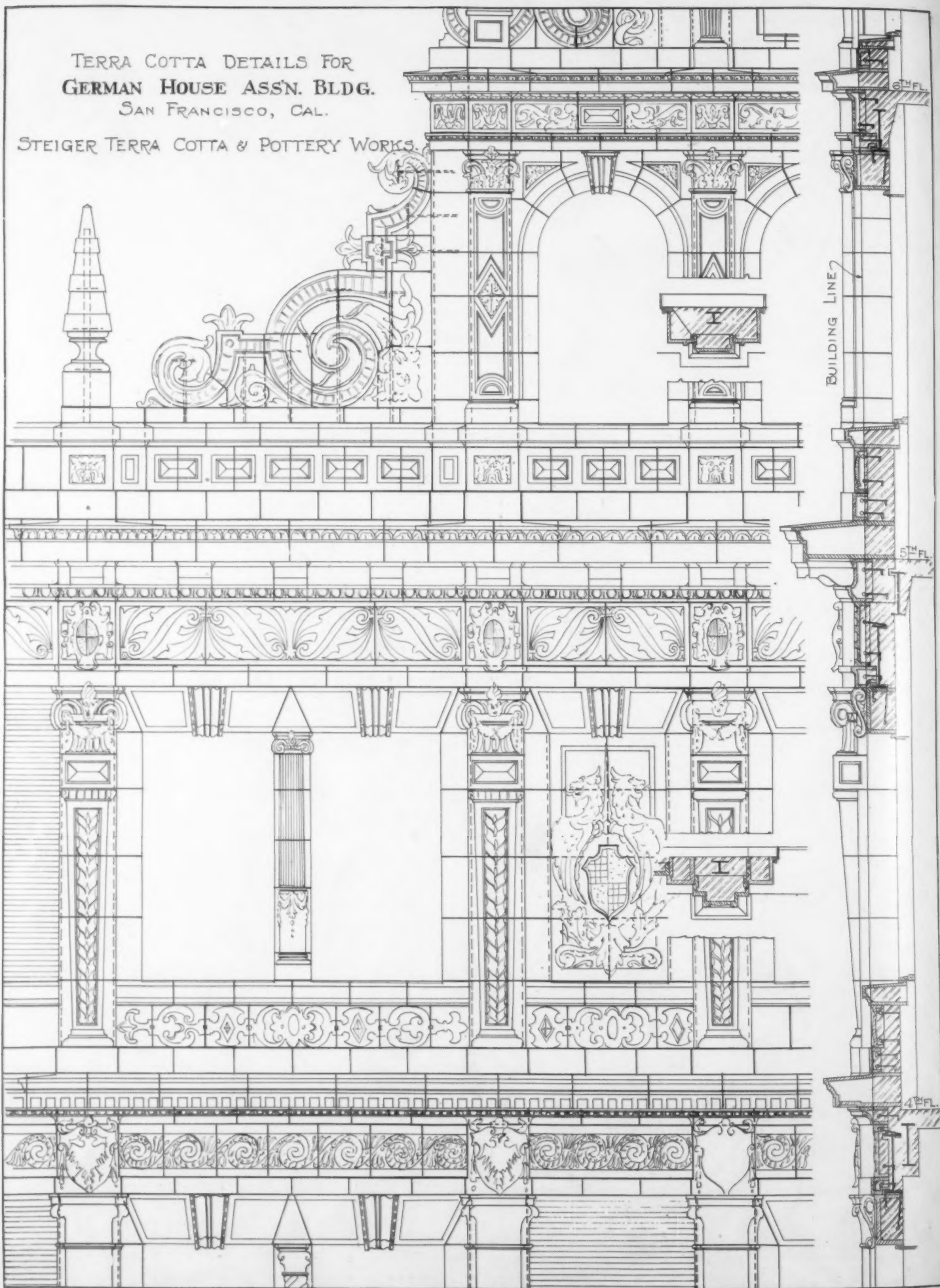
ELEVATION OF FRIEZE
& SECTION
TERRACE CEILING

DETAILED
PLAN
CEILING



DETAILS END BAY
SCALE 1" = 1'-0"

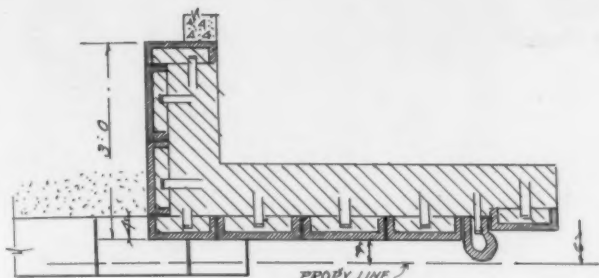
BARNSHEISEL BUILDING, CHICAGO. W. CARBYS ZIMMERMAN, ARCHITECT.
Showing Michigan Avenue elevation and details of terra cotta design and construction.
Work executed by Midland Terra Cotta Company, Chicago, Ill.



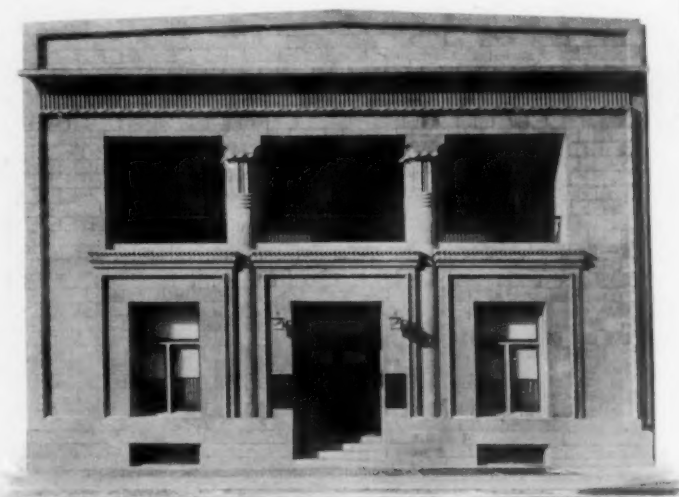
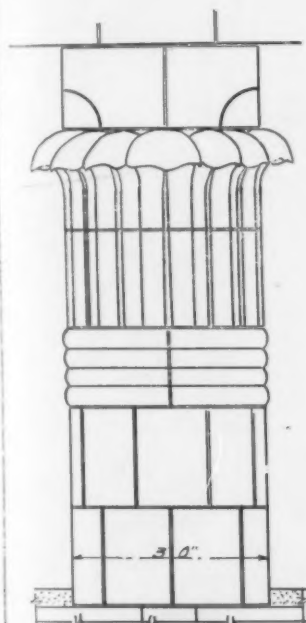
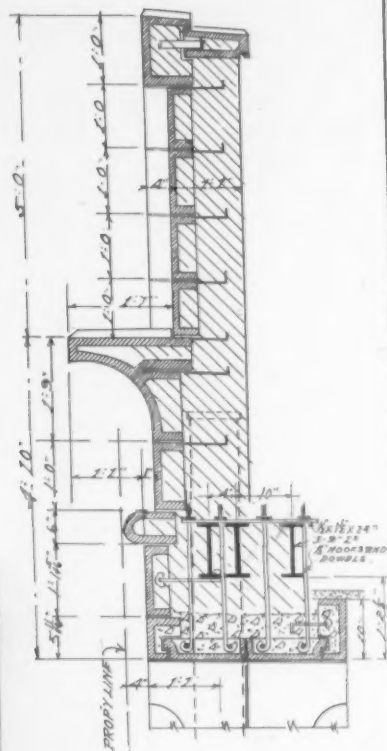
TERRA COTTA CONSTRUCTION DETAILS.

Work executed by Steiger Terra Cotta and Pottery Works, San Francisco, Cal.

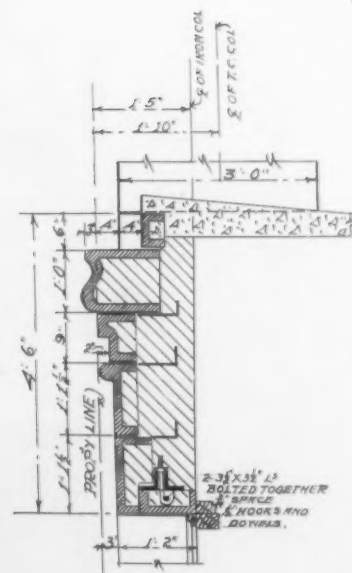
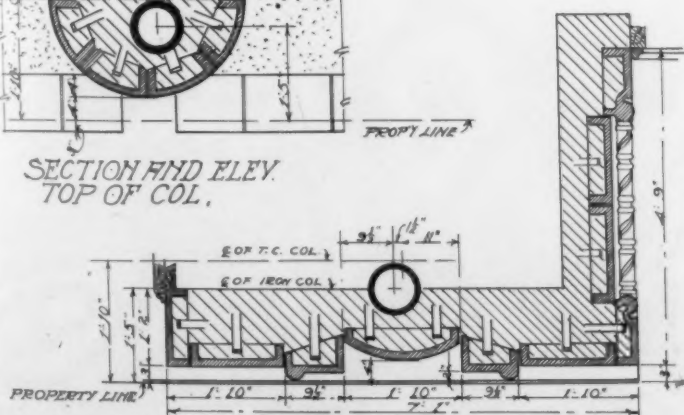
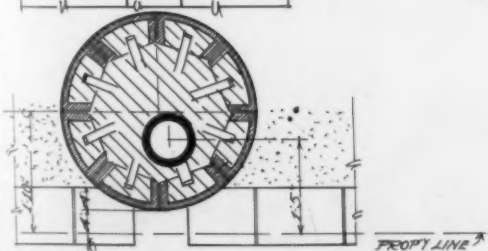
TERRA COTTA CONSTRUCTION DETAILS



BUILDING FOR
E. STINE & SON UNDERTAKING COMPANY.
KANSAS CITY, MO.



RED GRANITE FINISH TERRA COTTA
BY
WESTERN TERRA COTTA CO.
KANSAS CITY, KAN.
J. W. McKECKNIE ARCH'T.

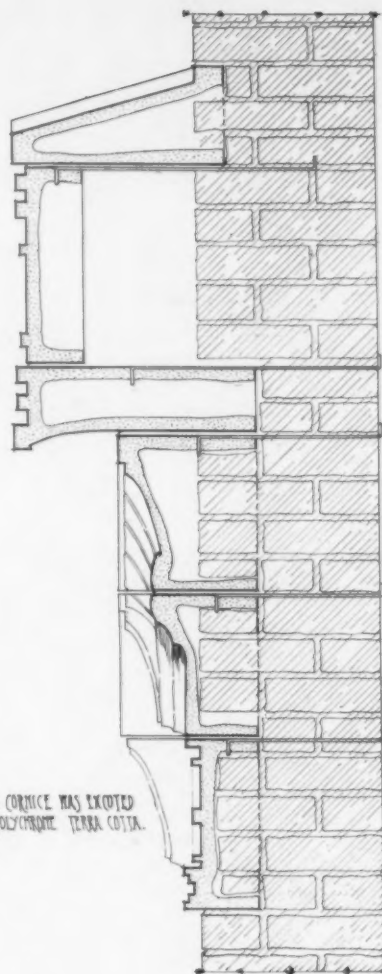


TERRA COTTA CONSTRUCTION DETAILS.

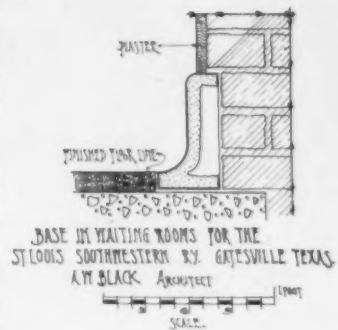
Work executed by Western Terra Cotta Company, Kansas City, Kan.



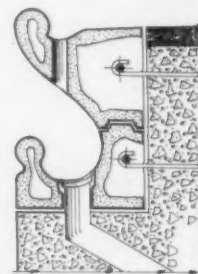
DETAIL OF MAIN CORNICE FOR THE MOULAN TEMPLE. ST. LOUIS MO.
HELSENSTELLER, HURCH & MATSON. ARCHITECTS. ST. LOUIS MO.



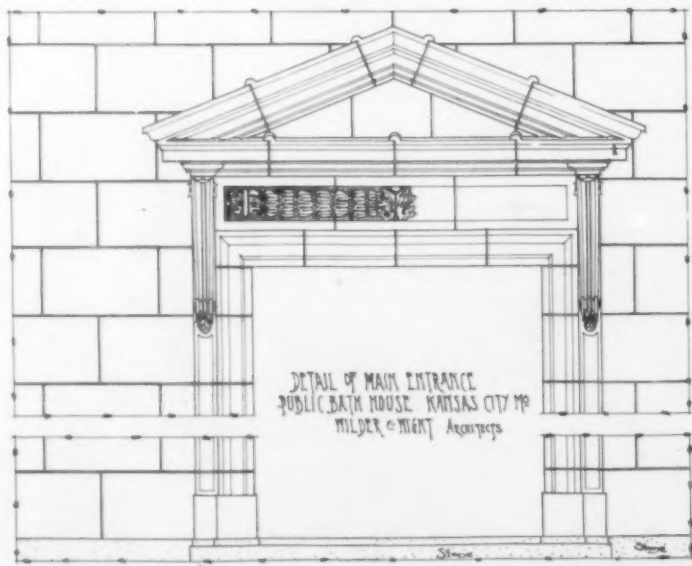
THIS CORNICE WAS EXECUTED BY POLYCHROME TERRA COTTA.



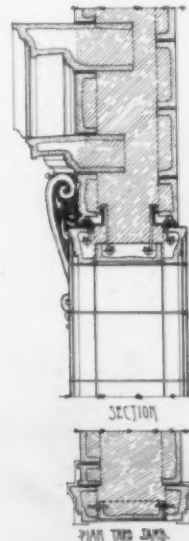
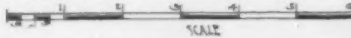
BASE IN WAITING ROOMS FOR THE ST. LOUIS SOUTHWESTERN RY. GATESVILLE TEXAS.
A.W. BLACK ARCHITECT.



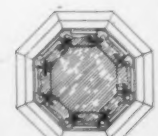
LIFE RAIL SWIMMING POOL. Y.M.C.A. BURLINGTON IOWA.
SHATTUCK & HUSSY ARCHITECTS.



DETAIL OF MAIN ENTRANCE PUBLIC BATH HOUSE. KANSAS CITY MO.
MILDOR & MIGHT ARCHITECTS.



SECTION



PLAN THIRD COLUMN.

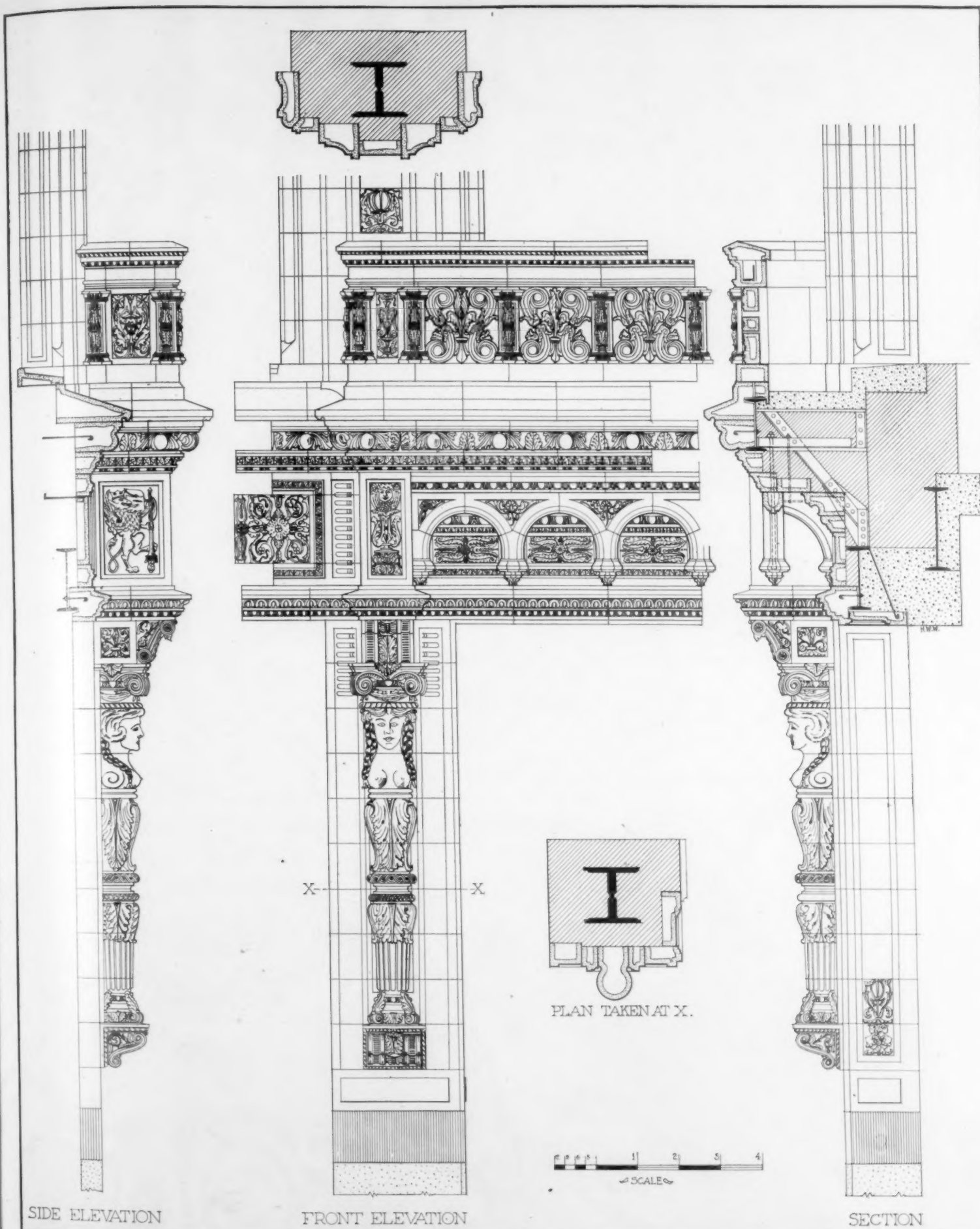
DETAIL OF COLUMN AT MAIN ENTRANCE OF YORKWOOD HIGH SCHOOL. CINCINNATI OHIO. BAUSMITH & DEANE ARCHITECTS.



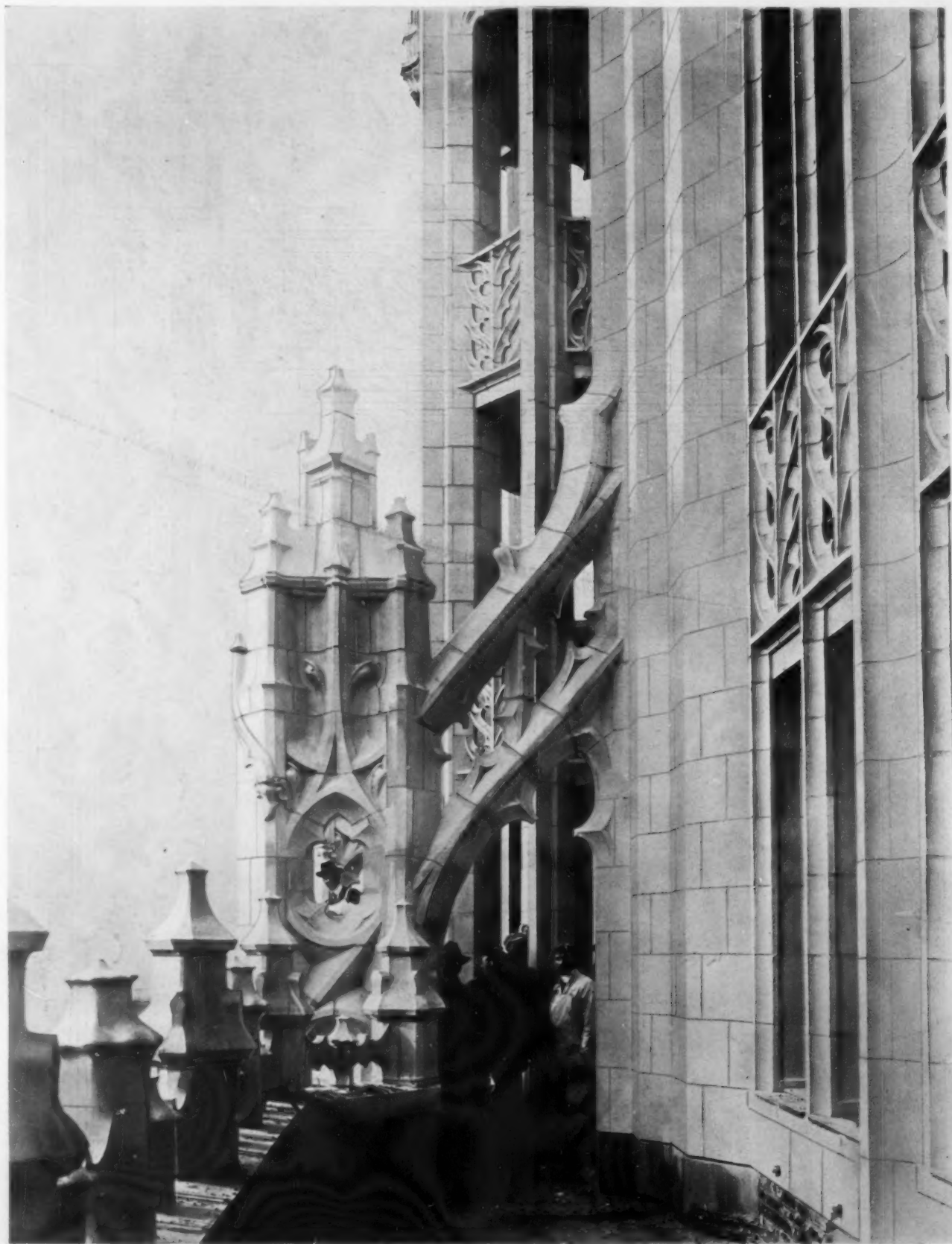
TERRA COTTA CONSTRUCTION DETAILS.

Work executed by St. Louis Terra Cotta Company, St. Louis, Mo.

TERRA COTTA CONSTRUCTION DETAILS



DETAILS OF TERRA COTTA DESIGN AND CONSTRUCTION.
Entrance to Railway Exchange Building, St. Louis, Mo., Mauran, Russell & Crowell, Architects.
Work executed by The Winkle Terra Cotta Co., St. Louis, Mo.



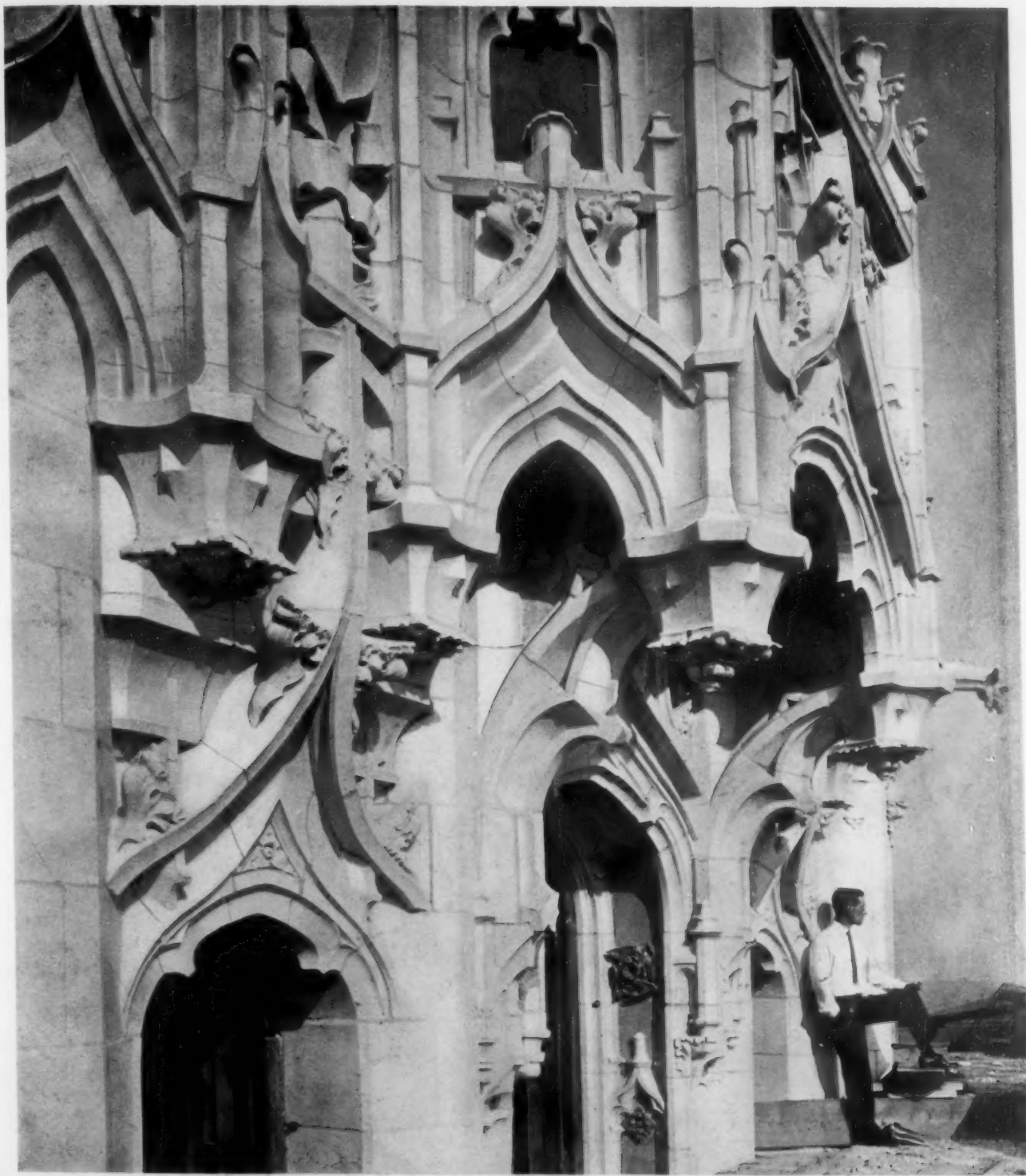
THE WOOLWORTH BUILDING, NEW YORK. CASS GILBERT, ARCHITECT.
Flying buttress at 47th story. Note beginning of corner minaret in background.
Terra Cotta by Atlantic Terra Cotta Company, New York.



THE WOOLWORTH BUILDING, NEW YORK. CASS GILBERT, ARCHITECT.
From third story to 52d story level is entirely of Architectural Terra Cotta in matt cream and polychrome.
Terra Cotta by Atlantic Terra Cotta Company, New York.



THE WOOLWORTH BUILDING, NEW YORK. CASS GILBERT, ARCHITECT.
Termination of corner minaret at 52d story level. Note colored background.
Terra Cotta by Atlantic Terra Cotta Company, New York.

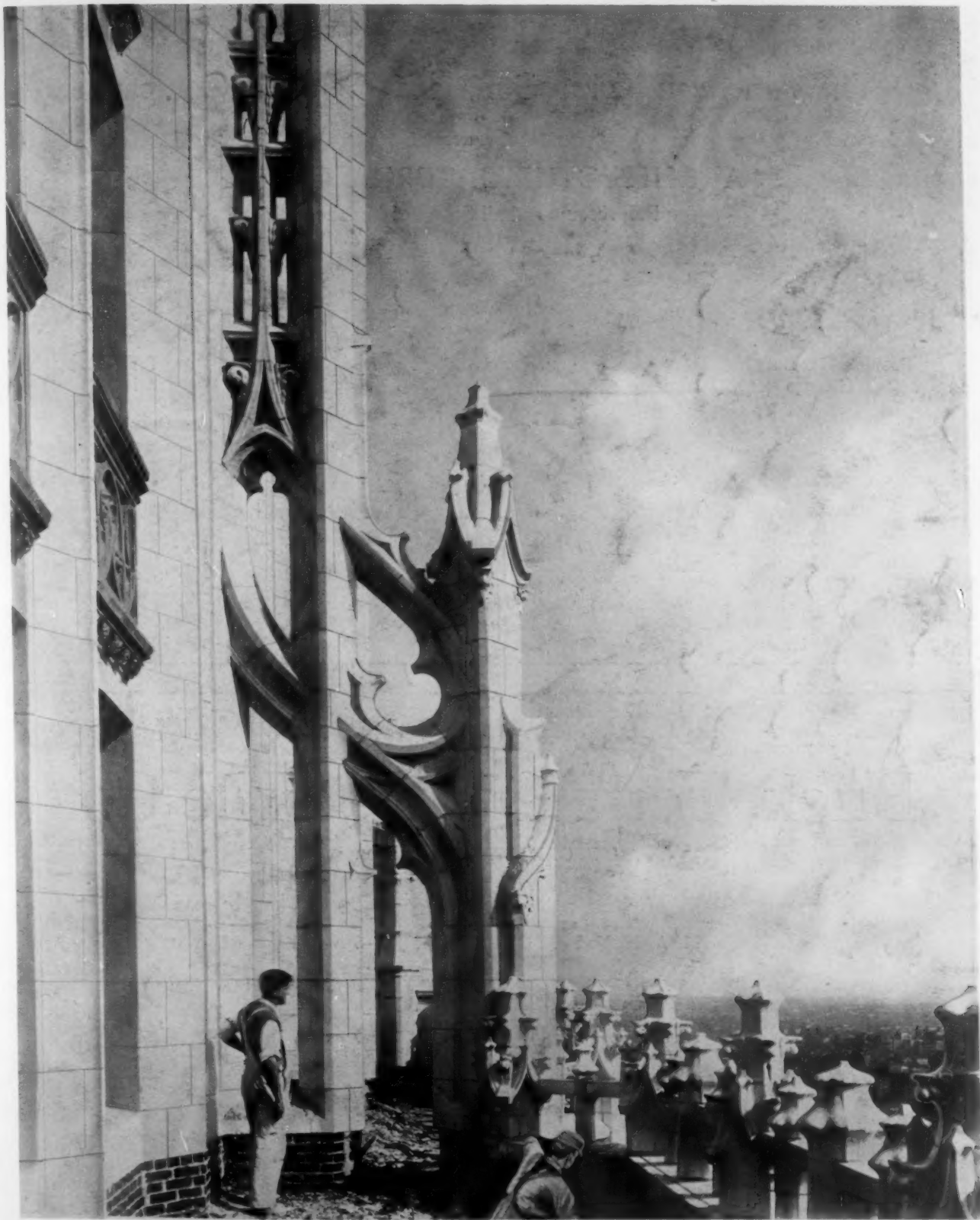


THE WOOLWORTH BUILDING, NEW YORK. CASS GILBERT, ARCHITECT.

Canopy at 26th story. In the window jamb shown six colors appear.
Terra Cotta by Atlantic Terra Cotta Company, New York.



THE WOOLWORTH BUILDING, NEW YORK. CASS GILBERT, ARCHITECT.
Window jamb at 46th story. Six colors appear in this detail. Notice the new Municipal Building in the background.
Terra Cotta by Atlantic Terra Cotta Company, New York.



THE WOOLWORTH BUILDING, NEW YORK. CASS GILBERT, ARCHITECT.
Flying buttress at the 42d story marking the first break in the sheer ascent of the tower.
Terra Cotta by Atlantic Terra Cotta Company, New York.

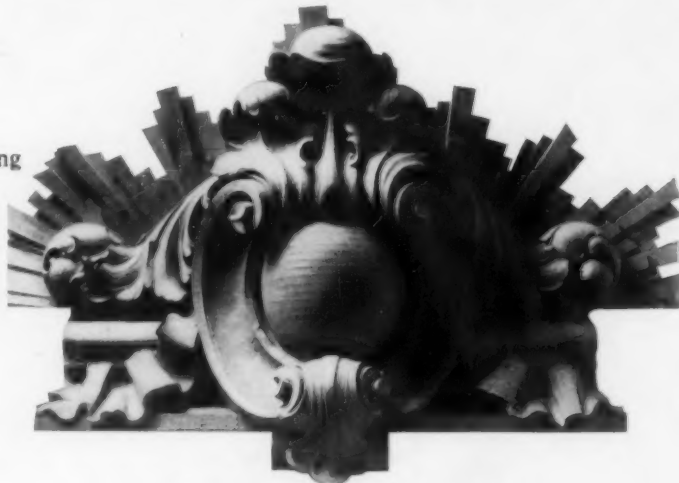
The American Terra Cotta and Ceramic Company

Manufacturers of

ARCHITECTURAL TERRA COTTA

Polychrome and all Standard Finishes

Offices
People's Gas Building
Chicago



Factory
Terra Cotta
Illinois

Cartouche Executed in Terra Cotta

Brick, Terra Cotta & Tile Co.

M. E. GREGORY, PROPRIETOR

MANUFACTURERS OF

ARCHITECTURAL
TERRA COTTA

Works and Main Office: CORNING, N. Y.

NEW YORK
E. H. THOMAS, 1123 Broadway

AGENCIES
ALL THE PRINCIPAL CITIES